December 1960
JPH
VOLUME 50 NUMBER 12

AMERICAN

Journal of Public Health

AND THE NATION'S HEALTH

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AMERICAN
Journal of Public Health
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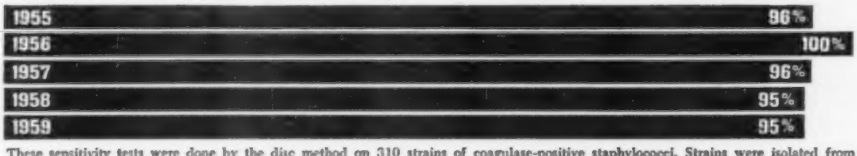

These sensitivity tests were done by the disc method on 310 strains of coagulase-positive staphylococci. Strains were isolated from patients seen in the emergency room. It should be noted that among inpatients, resistant strains were considerably more prevalent.

Adapted from Bauer, A. W.; Perry, D. M., & Kirby, W. M. M.: *J.A.M.A.* **173**:475, 1960. 10360

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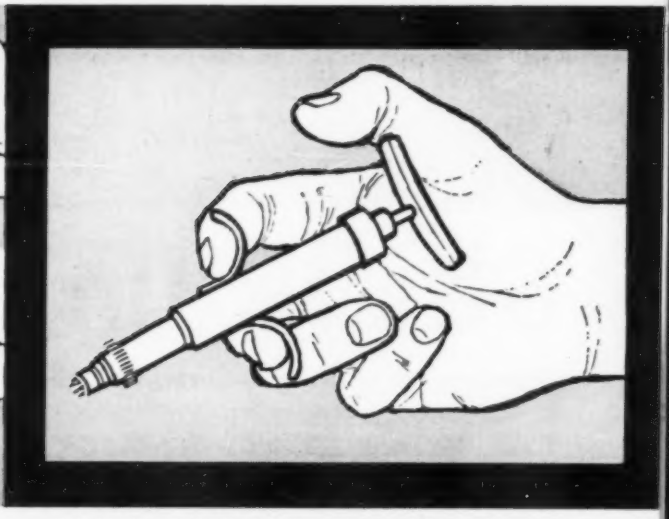

Procedure for STERNEEDLE TUBERCULIN TEST:

Top, left... Slip needle cartridge on gun with plastic applicator. Remove applicator.

Top, right... Place a drop of tuberculin PPD on cleansed forearm.

Bottom, left... Place gun on drop of tuberculin PPD. Pressure and release of handle automatically triggers and retracts the needles.

Bottom, right: Disposable needle cartridges and applicators may be washed and sterilized for reuse, if desired.

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The Public Health Nurse

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The Epidemiologist

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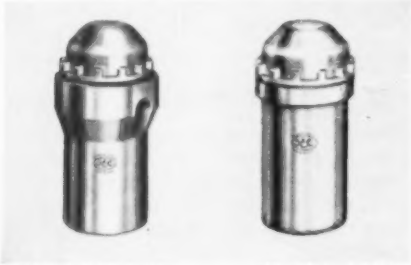
MAXIMUM SAFETY MEASURES NEEDED

If laboratory work is to be made completely safe for scientist and technician, this "aerosol effect" must be eliminated. Procedures which utilize maximum safeguards will insure protection of personnel.



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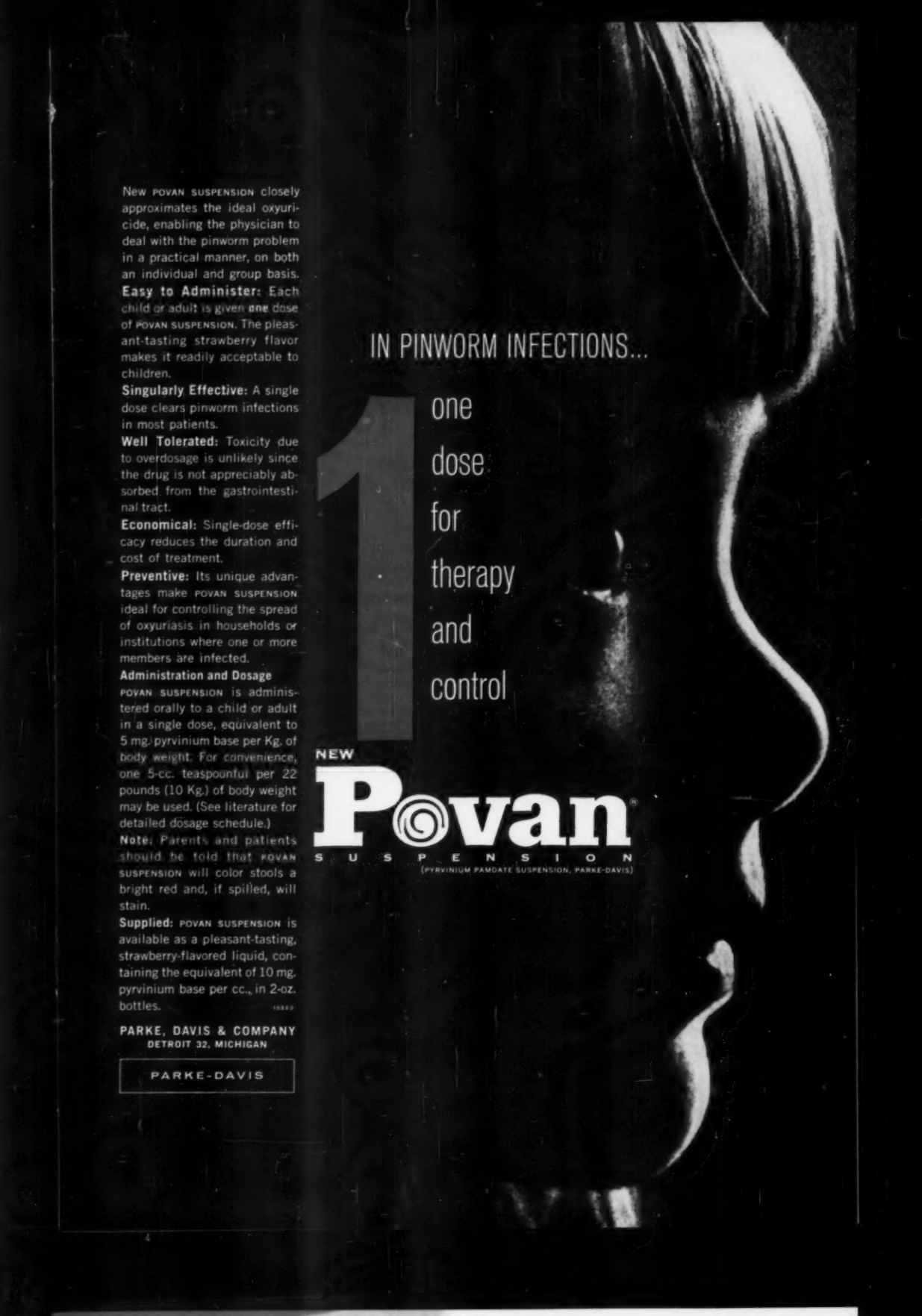

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For the maintenance of health and well-being the recommended daily dietary allowances for "Women, 65 years," is lower in calories, yet is the same in essential nutrients as for younger age groups. A moderate reduction in dietary fat reduces the total calories. For those advising women in this age group about their diet, *a basic cereal and milk breakfast* as shown in the chart below merits consideration. Its fat content of 10.9 gm. provides 20 per cent of the total calories. *Thus it is a moderate low-fat breakfast.* As shown in the chart below, it provides for "Women, 65 years," and for younger age groups about one-fourth of the recommended daily dietary allowances of protein, important B vitamins, and essential minerals. The Iowa Breakfast Studies demonstrated that *a well-balanced, moderate low-fat basic cereal and milk breakfast was nutritionally efficient for the young and old alike.*

Recommended Daily Dietary Allowances and the Nutritional Contribution of a Basic Cereal and Milk Moderate Low-Fat Breakfast*

Menu: Orange Juice—4 oz.;
Cereal, dry weight—1 oz.;
Whole Milk—4 oz.; Sugar—1 teaspoon;
Toast (white, enriched)—2 slices;
Butter—5 gm. (about 1 teaspoon);
Nonfat Milk—8 oz.

Nutrients	Calories	Protein	Calcium	Iron	Vitamin A	Thiamine	Riboflavin	Niacin equiv.	Ascorbic Acid
Totals supplied by Basic Breakfast	503	20.9 gm.	0.532 gm.	2.7 mg.	588 I.U.	0.46 mg.	0.80 mg.	7.36 mg.	65.5 mg.
Recommended Dietary Allowances—Women, 65 Years (58 kg.—128 lb.)	1800	58 gm.	0.8 gm.	12 mg.	5000 I.U.	1.0 mg.	1.5 mg.	17 mg.	70 mg.
Percentage Contributed by Basic Breakfast	27.9%	36.0%	66.5%	22.5%	11.8%	46.0%	53.3%	43.3%	93.6%

Cereal Institute, Inc.: Breakfast Source Book. Chicago: Cereal Institute, Inc., 1959.
Food & Nutrition Bd.: Recommended Dietary Allowances, Revised 1958. Natl. Acad. Sci.—Natl. Research Council Publication 589, 1958.
Watt, B. K., and Merrill, A. L.: Composition of Foods—Raw, Processed, Prepared. U.S.D.A. Agriculture Handbook No. 8, 1950.

**The allowance levels are intended to cover individual variations among most normal persons as they live in the United States under usual environmental stresses. Calorie allowances apply to individuals usually engaged in moderate physical activity. For office workers or others in sedentary occupations they are excessive. Adjustments must be made for variations in body size, age, physical activity, and environmental temperature.*

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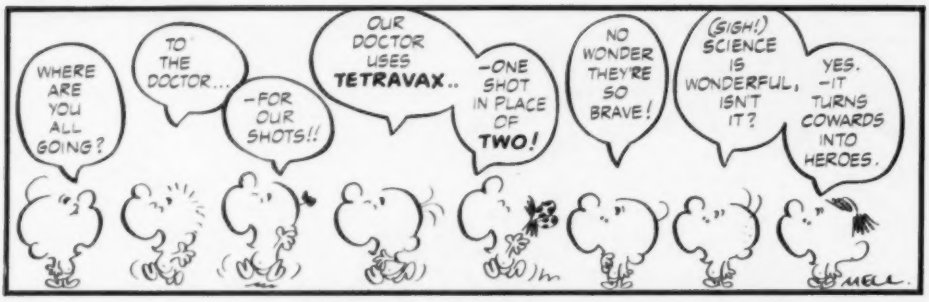
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Professional Division

SPECIAL MESSAGE TO PUBLIC HEALTH PEOPLE

CONCERNED WITH CONTROL OF STAPH INFECTIONS

As your daily activities in fighting the spread of staphylococcal infection no doubt reveal, the same antibiotic-resistant phage types found in the hospital are now well established in the community. During recent years, close attention by hospitals to curtailing transmission of staph, both within the hospital and into the community at large through discharged patients, visitors, or hospital personnel, has revealed how vicious the cycle of infection has become.

A good example is the three-year study from the 900-bed Temple University Medical Center, reported by Dr. H. Taylor Caswell and his co-workers in Surgery, Gynecology & Obstetrics, May, 1960. They report that, with stricter aseptic control and patient management, the infection rate in 10,000 clean surgical wounds per year decreased approximately 60% to .55%, with 53% due to 80/81. However, there was an appreciable increase in hospital related medical infections with phage type 80/81 identified in 71% of the cases. During this same period, the number of heavily contaminated patients admitted for treatment of staphylococcal disease doubled, constantly re-infecting the hospital with staph strains which may have originated there.

In New York State where reporting of staph infections is now state law, dangers from staph in the home were discussed by a panel and reported on by Dr. Andrew C. Fleck in the March 15, 1960, issue of the New York State Medical Journal. Death of a mother from staphylococcal pneumonia followed exposure through her child, first hospitalized for chronic cystic fibrosis. In another family, ten out of eleven members, and their public health nurse, were afflicted with chronic furunculosis.

Every age is susceptible to staph infection - from the newborn and infants to elderly individuals with debilitating disease. Since transmission can be by contact with patient or carrier, with

articles contaminated by infected persons, by droplet spread, or by contaminated dust redispersed in the air - scrupulous aseptic technics in handling the patient and thorough environmental disinfection are essential whether in the hospital or the home.

When your recommendations to hospitals for staph control include meticulous housekeeping and thorough environmental disinfection, have you considered the specific practical advantages of Lehn & Fink phenolic disinfectants? Bacteriologic data and clinical evidence of the effectiveness of Amphyl®, O-syl®, Lysol® disinfectants, and Tergisyl® detergent-disinfectant are available on request. In addition to being staphylocidal, all are broadly microbicidal including tuberculocidal, pseudomonacidal, and fungicidal. They are easy to use for regularly scheduled disinfection procedures wherever communication of staph is a problem.

Please write for literature on all products. Samples, too, if you wish. If you would like copies of instructions for teaching purposes, we will be glad to send these in quantity. May we hear from you?

Charles F. Manz
Professional Division

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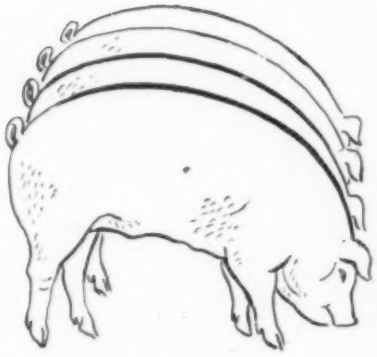

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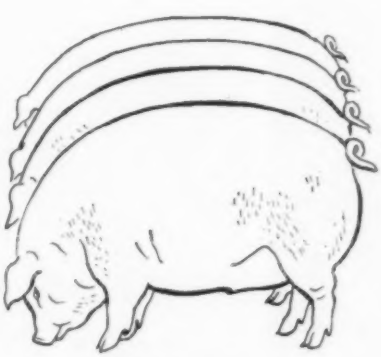

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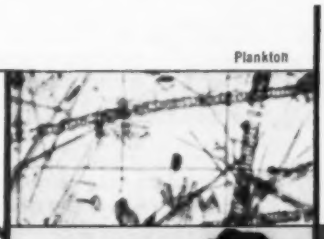

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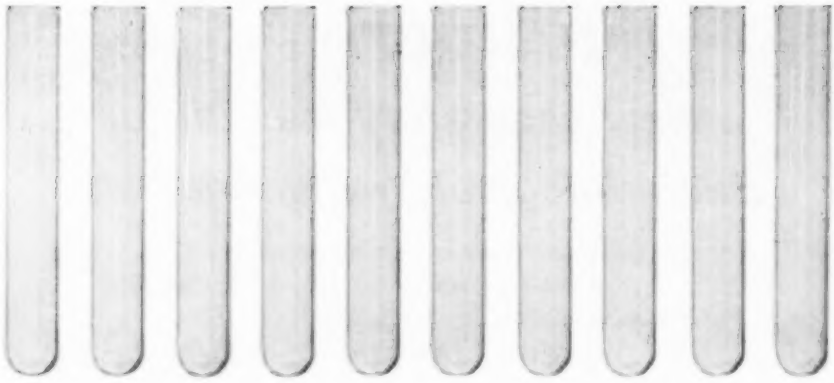

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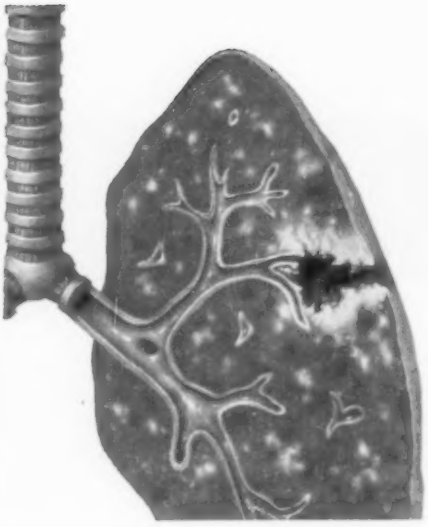

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1. Davey, W. N.: GP 19:107, No. 1, 1959.

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Journal of Public Health

This report describes a rapid survey technic designed to obtain data for comparison of polio immunization levels among subpopulation groups in an urban community. The authors discuss how such a survey can be most usefully employed by the health officer and others concerned with polio immunization.

THE CDC QUOTA SAMPLING TECHNIC WITH RESULTS OF 1959 POLIOMYELITIS VACCINATION SURVEYS

Robert E. Serfling, Ph.D., F.A.P.H.A.; Richard G. Cornell, Ph.D.; and Ida L. Sherman, M.S.

STUDIES[1-3] of 1958 poliomyelitis outbreaks brought into sharp focus recent major changes in attack rates by race and socioeconomic status. An epidemiological pattern of high concentration of paralytic cases among young children living in poor socioeconomic conditions was observed in Detroit, urban areas of northern New Jersey, and mining camp localities of Virginia and West Virginia.[4] In Detroit, cases were concentrated in the central sections of the city, areas with a large Negro population and much crowding. Prior to 1956, from 10 to 20 per cent of poliomyelitis cases had occurred among the Negro population, but in 1956 and 1957 the percentage increased to approximately 40 per cent and in 1958 to 60 per cent of total cases. Only a small part of the increase could be associated with the growing Negro population of the city. During the same year similar observations were made of poliomyelitis outbreaks in urban areas of New Jersey and in mining camp areas of Virginia. In the Virginia outbreaks the population was chiefly white, but paralytic cases were concentrated among very young children. A possible explanation of the unusual character of these outbreaks—a concentration of cases in young children living in depressed conditions—was a relatively low rate of artifical immunization in relation to other subpopulations of the epidemic areas. If this hypothesis were correct, it was quite probable that conditions in many urban areas were conducive to explosive outbreaks which could produce high attack

rates among unvaccinated preschool children. At this time, even in areas where outbreaks were occurring, there were no means to determine poliomyelitis vaccination rates according to the necessary classification: age, race, and socioeconomic status.

It was decided therefore to develop an urban survey technic of the following nature:

1. The general approach should be epidemiological with an urban area classified into geographical subareas according to socioeconomic, racial, and cultural characteristics and with estimation of immunization rates for each subgroup as the primary objective of the survey design.
2. Needs for technical assistance should not be extensive, advance planning brief, and analysis prompt and simple.
3. Interviewers would have to be provided from the regular health department staff.

Each population subgroup was to be treated as an independent unit in estimating immunization rates. Estimation of an average rate for the entire urban area was rejected as an important factor. Also, comparison of results from one city with those of another was considered of trivial importance. Therefore, considerable flexibility was permissible in the design of individual surveys to answer questions of importance to a particular city.

A pilot survey was conducted in the city of Atlanta in November, 1958, a manual of operations[5] was prepared, and in January, consultation with the Statistics Section staff of the Communicable Disease Center was made generally available, through the Public Health Service's regional offices, to cities wishing to conduct an immunization survey. The response was immediate. From May through June, consultation was given to 36 cities located in all parts of the country. The method proved adaptable to a broad variety of conditions. To focus attention on specific problems, a survey of one city is described here in some detail.

The Boston Survey

A survey of the city of Boston was conducted late in March, 1959. In its general plan, it typifies a number of surveys conducted in cities ranging in size from a hundred thousand to a million in population. The city of Boston and the Massachusetts State Health Department provided epidemiological guidance, clerical assistance, interviewers, maps, forms, and other assistance. Technical guidance was provided by the Communicable Disease Center. The schedule of operations was as follows:

Monday, March 23: Planning sessions with local groups
Tuesday, March 24: Final definition of plans
Wednesday, March 25: Location of primary sampling units and preparation of an interviewer's manual of instructions
Thursday, March 26: Field examination of primary sampling units in certain sections of the city
Friday, March 27: Preparation of itinerary with map and listing of sample points for each interview team
Monday, March 30: Assembly of interviewers' kits and general review of plan
Tuesday, March 31: Briefing of interviewers and commencement of field work
Wednesday, April 1: Completion of field work and tabulation of Tuesday's returns
Thursday, April 2: Completion of tabulations and field call backs
Friday, April 3, a. m.: Preparation of report
p. m.: Review of report with Health Department

In 1950, the city of Boston had a population of approximately 800,000. Originally comprising only a group of small villages surrounding Boston Harbor and the Charles River, the city limits now also include a considerable adjacent area.

An initial classification of the city into subpopulations was based on a rank index constructed from 1950 census data which provided measures of crowding, sanitation, and education by census tract. After the tracts had been ranked by these criteria, they were classified

into three groups, "upper socioeconomic" including the 25 per cent of the tracts with highest ranks, "middle socioeconomic," including the central 50 per cent of the ranks, and "lower socioeconomic" including the 25 per cent of the tracts with lowest ranks.

Within these broad groupings two subpopulations, considered as possibly differing from the general population with respect to their acceptance of the poliomyelitis immunization program, were distinguished. These were (1) a central area populated by a predominantly Negro population and (2) the "North End," the oldest part of the city in which the dominant culture of recent generations has been Italian. To the casual observer the latter area appears to be a typical slum. It was believed, however, that many families of the area remained there for sentimental rather than economic reasons and were probably of quite different character from inhabitants of other census tracts classified as lower socioeconomic.

Thus, five subpopulations with distinctive characteristics were defined. Collectively, these included the entire area of the city of Boston as shown in Figure 1.

The number of subpopulations was determined in part from the factors mentioned but also with some consideration of the number of available interviewers. These included eight nurses and eight sanitary inspectors who were to be available for two days of field work. Working in pairs, they formed eight teams. Both members of one team spoke Italian and were assigned to the North End. Itineraries for the seven teams assigned to the other four subpopulations were arranged so that each team took an approximately equal number of interviews in each subpopulation. Through this device, differences in interviewing skill were eliminated when subpopulations were compared.

Within subpopulations, primary sampling units were first distributed to census tracts in proportion to the 1950 population of each tract. Within census tracts, they were located by a process of randomization. The procedure used permitted any geographic point within the census tract to have approximately the same chance of selection as any other point. When a point was thus determined, the nearest street intersection was taken as the focal point of a primary sampling unit.

The primary sampling unit itself consisted of the "arms" of an intersection, each extending a distance of one block. Four interviews, two by each member of a team, were taken at each intersection. To determine a particular dwelling unit for interview, the total number of dwelling units on both sides of the street within a one-block interval was estimated by the interviewer and then a particular dwelling unit was selected by use of a table of random numbers. Substitutes were not permitted. When no one was at home, a special call-back form was left by the interviewer. Call backs were completed by telephone when possible. If not, one field call back was made.

A standard interview form provided information on the number of poliomyelitis inoculations which each member of the household had received.

Results of the Survey

In Boston, 448 interviews were scheduled for the general population survey. Of these, 431 were completed; the remainder included 12 refusals and five incompleted interviews.

In the North End, only 54 of the 80 scheduled interviews were completed. The low completion rate was due in part to interviewer fatigue brought on by successive climbs to fourth floor flats and in part to interviews requiring more time than usual because of the sociable habits of this subpopulation.

Characteristic differences in age dis-

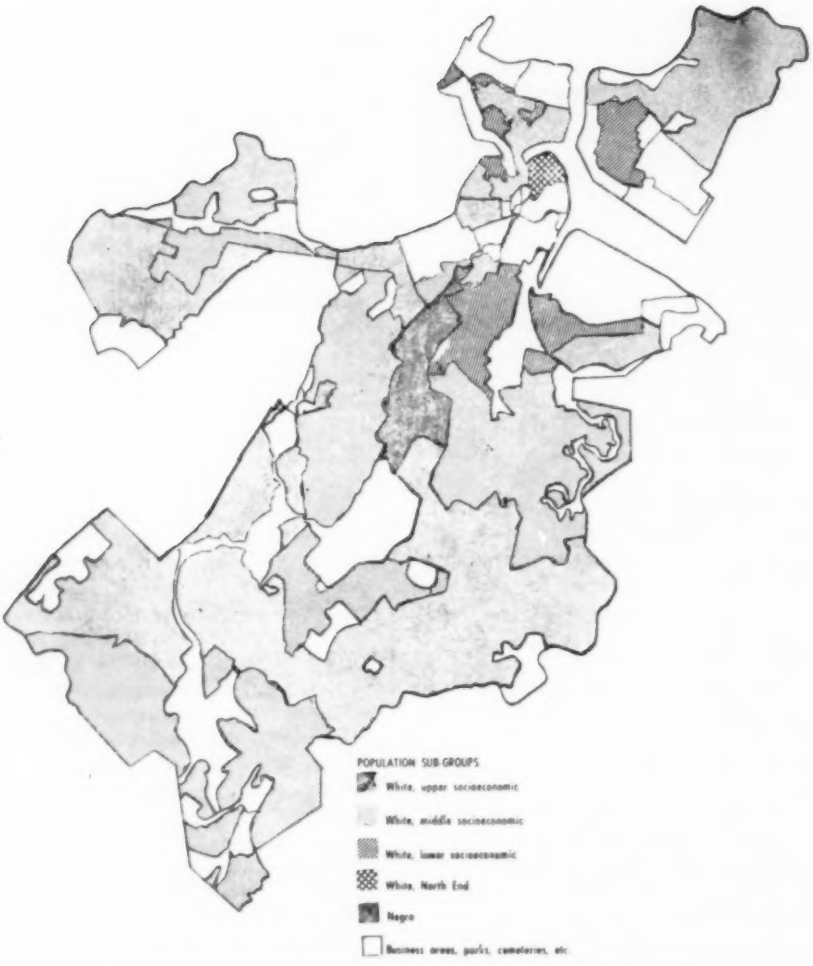

Figure 1—Classification of the City of Boston into Subpopulations

tribution of the subpopulations are evident in the larger percentage (Tables 1 and 2) of older persons in the upper socioeconomic group and the large percentage of young children in the Negro population. The North End group included a relatively large proportion of older persons and a somewhat smaller proportion of young children. Figure 2 and Table 3 present the immunization status of the sample populations. Distinct differences in immunization rates by subpopulations may be observed. The distinctly higher proportion of children under five years with three or more inoculations in the North End sample is notable when compared with other groups initially classified as lower socio-

economic. The 5-to-14-age-group showed relatively high immunization rates in all samples.

In the age-group 15 to 39 the upper socioeconomic white subpopulations appeared to be somewhat better immunized than other groups, but at ages 40 and over relatively few persons had been immunized in any of the subpopulations.

Results of Other Surveys

It has been previously mentioned that the Communicable Disease Center provided technical assistance on poliomyelitis immunization surveys to 36 cities during the early months of 1959. A majority of these have been reported in the weekly CDC Poliomyelitis Surveillance Unit Report. In Table 4 the cities surveyed are listed with a reference to the issue of the PSU Report containing a description of the findings. A number of additional surveys were made by State Health Department personnel who had participated in an initial survey in the state.

The general plan of the Boston survey was followed in other surveys but with appropriate local modifications. Only urban areas were surveyed, although many county-wide health departments desired to include the rural area within their jurisdiction and many rural health departments wished to conduct surveys. A modified technic adapted to this purpose has now been developed and two pilot rural surveys, one in Halifax County, N. C., and one in Jefferson County, Mo., have been completed.

For the reasons mentioned, comparison of immunization status from one city to another depends on a number of variables: modifications in local procedures, different methods for classification of subpopulations, and analysis by age in accordance with groupings of special interest to the local health departments. All these factors make intercity comparisons difficult, if not invalid.

Nevertheless, a general impression of the nationwide experience is of interest and for this purpose Figure 3 has been

Table 1—Subpopulations and Sample Composition*

Area	1950 Population	Scheduled Interviews	Completed Interviews			Total Persons†				
			Total	White	Nonwhite	All Ages	<5	5-14	15-39	40+
1. White, upper	252,200	104	99	92	7	355	50	63	108	134
2. White, middle	344,500	104	98	98		397	56	97	142	102
3. White, lower	73,200	104	102	95	7	368	55	104	119	90
4. North End	16,000	80	54	54		180	22	31	57	70
5. Negro	62,900	136	132	27	105	440	92	109	160	79
Subtotal	748,800	528	485	366	119	1,740	Totals by age have no valid interpretation			
6. Not included in survey	52,644									
7. Grand total	801,444									

* Line 6, areas not surveyed, includes the central business district and the population of areas eliminated since 1950 by the urban-renewal problem.
† "Total persons" includes only white for areas 1, 2, 3, and 4 and only nonwhite for area 5.

Table 2—Special Characteristics of the Sample Populations

Area	Persons Per Household	Per cent Under 5	Per cent Over 40
White, upper	3.9	14.1	37.7
White, middle	4.1	14.1	25.7
White, lower	3.9	14.9	24.5
North End	3.3	12.2	38.9
Negro	4.2	20.9	18.0

prepared. This shows results for the white population classified by socioeconomic level and age-group according to the proportion of persons having received three or more poliomyelitis inoculations. Findings are given for 26 cities which used the same age-grouping as the Boston survey. The cities included are marked with an asterisk in Table 4.

In general, results followed a pattern similar to that shown by the Boston survey. This is emphasized by the horizontal dashed line in Figure 3 indicating the median value for each age and socioeconomic group.

The age-group under five is of smallest sample size in all cities and hence exhibits the greatest degree of inherent sample variation. However, it is of interest to note that the highest immunization rates in lower socioeconomic groups rarely approached the lowest rates for upper socioeconomic levels.

In the age-group 5 to 14 a considerable difference in variability by socioeconomic level may be observed. This is believed to reflect differences in school immunization programs.

In the age-group 15 to 39 the general pattern is similar to that in the group under age five. In the 15 to 39 group, sample sizes were considerably larger than in the under-five group, and, hence, a greater portion of the variability may be attributed to differences among cities in availability of clinics, prevailing medical practices, and recognition of a need for immunization by older persons.

Practical Results of the Surveys

In Boston the survey findings were considered a major factor in winning support of the three local medical societies for mass immunization through dollar clinics. Some 30 such clinics were established at strategic points easily accessible to those populations found to be poorly immunized. Over 30,000 inoculations were given in a first series of clinics and approximately the same number in a similar group of clinics held a month later for second inoculations. The governor of Massachusetts designated May as poliomyelitis vaccination month and appeared on both radio and television to urge everyone to be immunized.

In other cities, community interest and activity were manifested in a variety of ways. In St. Paul, Minn., during the summer months, clinics were established in community centers and neighborhood libraries. In Columbus, Ohio, a door-to-door campaign was conducted by a "Mothers' March" with a goal of 40,000 inoculations by July.

In Providence, R. I., the activity following the survey gave rise to the establishment of immunization clinics in satellite towns and communities not included in the survey.

In Dallas, Tex., nine new clinics were inaugurated, seven in local church buildings. In Houston, an "Operation-Polio-Mobile" was conducted by the Junior Chamber of Commerce which enrolled 17 civic organizations and 19 commercial establishments as participants in the project.

In the small town of Casper, Wyo., where no local health department existed, clinics were set up by the local medical society following a survey conducted by the State Health Department

in cooperation with the local chapter of the National Foundation.

In general, radio and television stations as well as local newspapers contributed time and space generously to the local poliomyelitis immunization programs.

Discussion

In reviewing the field experience, it may be said that the objectives of swift initial planning, simplicity in field procedures, and rapid analysis have been shown feasible.

The general validity of the results have met the test of careful scrutiny by seasoned health officers and epidemiologists. In this practical sense no important biases have been found in the method. Nevertheless, it should be stressed that there are two inherent biases in the procedure which, although apparently not serious in the present application, might be of concern if the method were applied indiscriminately.

Specifically, both the procedure for selection of primary sampling units within census tracts and the procedure for selection of a dwelling unit within primary sampling units have the effect of giving a dwelling unit in a sparsely populated area a greater probability of entering the sample than one in a densely populated area.

Since census tracts are laid out with the purpose of obtaining reasonably homogeneous units, the socioeconomic characteristics of dwelling units within them tend to be somewhat independent of variation in dwelling unit density. Similarly, at a street intersection, there is commonly a similarity in the pertinent characteristics of nearby families.

However, particularly in large cities, extreme exceptions may occur. In certain transition areas high-rental apartment dwellings may be found cheek-by-jowl with dilapidated dwellings inhabited by a depressed population. Likewise, newly constructed housing projects may have a quite different population

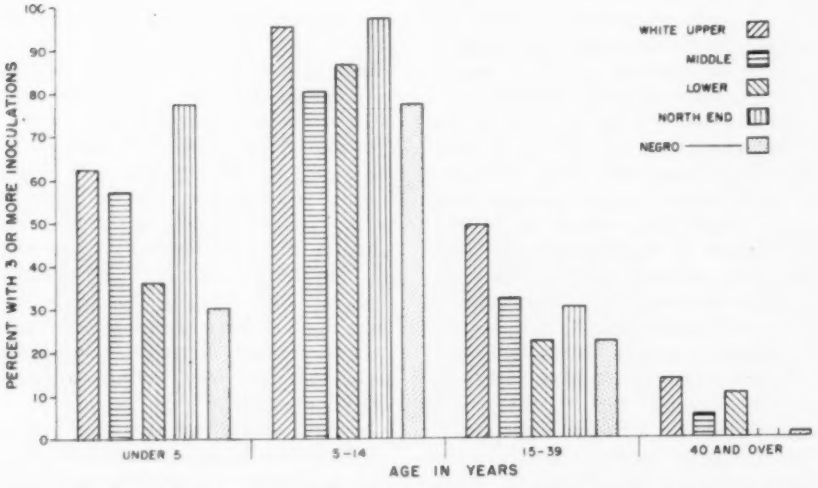

Figure 2—Results of the Boston Poliomyelitis Immunization Survey, by Age and Subpopulation

Table 3—Sample Findings on Poliomyelitis Immunization Status in Boston, April, 1959

Age Group	Sub-population	Total Persons	Number of Persons by Number of Inoculations						Per cent Reporting:	
			0	1	2	3	4	Unknown	3+	0
Under 5	White, upper	50	6	3	10	31	—	—	62	12
	White, middle	56	14	1	9	30	2	—	57	25
	White, lower	55	25	4	6	20	—	—	36	45
	North End	22	3	1	1	17	—	—	77	21
	Negro	92	47	4	13	28	—	—	30	51
5-14	White, upper	63	—	1	1	56	4	1	95	0
	White, middle	97	5	4	7	75	3	3	80	5
	White, lower	104	1	2	9	89	—	3	86	1
	North End	31	1	—	—	30	—	—	97	3
	Negro	109	7	3	8	83	1	7	77	6
15-39	White, upper	108	31	1	13	52	1	10	49	29
	White, middle	142	56	10	14	45	1	16	32	39
	White, lower	119	61	8	11	26	—	13	22	51
	North End	57	33	2	4	17	—	1	30	58
	Negro	160	91	10	13	35	—	11	22	57
40 and over	White, upper	134	106	4	4	16	1	3	13	79
	White, middle	102	89	1	1	5	—	6	5	87
	White, lower	90	73	2	—	9	—	6	10	81
	North End	70	69	—	1	—	—	—	0	99
	Negro	79	66	1	2	1	—	9	1	84

than in nearby areas. In the present surveys, such problems have been met by field inspection of primary sampling units in questionable areas with appropriate adjustment when necessary.

In conclusion, a few remarks on the usefulness of local surveys may be worthy of brief mention. A question may be asked whether a local immunization survey should be conducted at all. Certain figures on immunization are available from national surveys. These indicate a socioeconomic gradation in the extent of immunization.[6] Furthermore, a consistent pattern of immunization deficiencies has been shown repeatedly in city after city through the present surveys. Cannot a health officer assume that the same pattern prevails in his own community and initiate an immunization program on this assumption?

This is certainly possible, but, even though a health officer may suspect that his local problem is similar to that of other cities, most of the evidence he can readily obtain is likely to point in a different direction. His sources of information are his own program activities and the experience of local physicians. If he inquires, his child health centers will correctly inform him that it is standard practice to immunize all children in families availing themselves of the clinic resources. Pediatricians will tell him that they routinely immunize all children in their practice and parents as well, when it is indicated. School surveys may indicate a fairly high immunization rate.

Health officers are of course aware of the defects in the sources of information mentioned and usually suspect quite accurately where their problems lie. The real problem is to convince other local

groups to expend time and money in situations where the health officer lacks data to demonstrate the accuracy of his conclusions.

A local survey of the type described yields data which makes the problem apparent to all and provides a base from which the community momentum necessary for a vigorous program develops rapidly. The impact of information specifying a community's particular problem greatly exceeds the force of argument based on analogy with other areas.

Table 4—Poliomyelitis Immunization Surveys in 1959[1]

State	City	Date of Survey	Poliomyelitis Surveillance Report Number	Publication Date	Surveys Included in Figure 3
Calif.	Long Beach	March	167	May 1	*
	Los Angeles	April	174	July 13	*
	Oakland	March	168	May 15	*
Colo.	Denver	February	163	March 6	*
District of Columbia		March	167	May 1	*
Ga.	Atlanta	(November, 1958)	160	(December 5, 1958)	*
Ill.	Chicago	May	175	July 17	
Iowa	Des Moines	July	178	August 7	*
Kan.	Wichita	June	171	June 19	*
Ky.	Lexington	March	165	April 3	*
La.	Monroe-W. Monroe	May	170	June 12	*
	Lafayette	May	170	June 12	*
Mass.	Boston	April	168	May 15	*
Mo.	St. Louis County	September	Unpublished		
	Jefferson County	October	Unpublished		
Minn.	St. Paul	April	169	May 29	*
N. M.	Albuquerque	May	182	September 4	
N. C.	Halifax County	September	188	October 16	
N. Y.	New York	January	176	July 24	
	Rochester	April	181	August 28	
	Syracuse	April	181	August 28	
Ohio	Columbus	February	166	April 20	*
Okla.	Oklahoma City	May	177	July 31	*
	Tulsa	May	183	September 11	*
R. I.	Providence	June	179	August 14	*
Tex.	Dallas	June	180	August 21	*
	Ft. Worth	May	180	August 21	*
	Houston	May	Unpublished		*
Utah	Salt Lake City	March	168	May 15	
Va.	Richmond	March	172	June 26	*
	Danville	March	Unpublished		*
	Fredericksburg	April	Unpublished		*
	Harrisonburg	April	Unpublished		*
	Radford	April	Unpublished		*
	Hampton	April	Unpublished		
Wyo.	Casper	April	173	July 6	*

[1] The surveys listed were conducted with technical assistance from Statistics Section, Epidemiology Branch, Communicable Disease Center. Additional surveys have been conducted by state and local health departments.

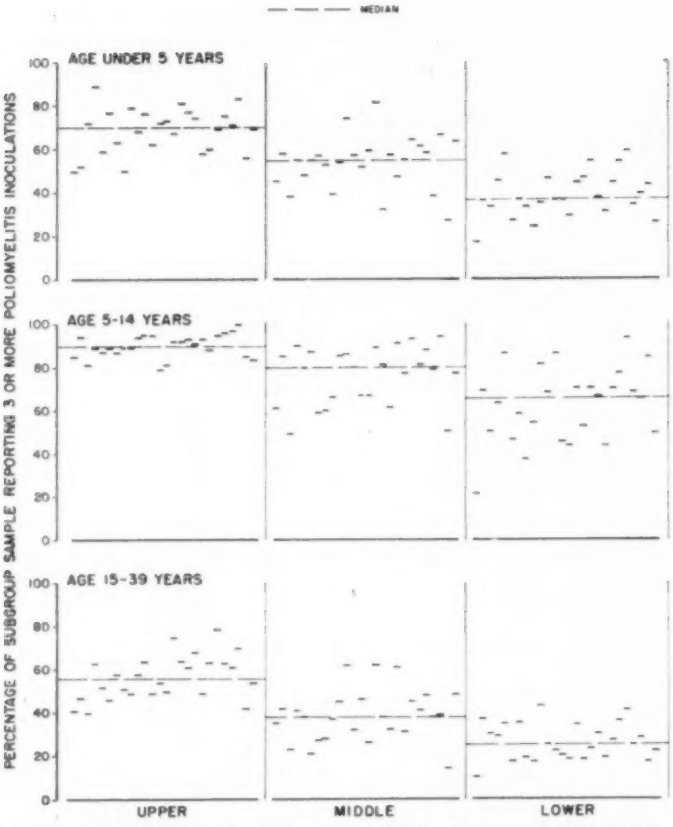

Figure 3—Poliomyelitis Immunization, by Age and Socioeconomic Subgroup: 26 U. S. Cities, January-June, 1959

Summary

A poliomyelitis immunization survey technic designed for rapid execution and analysis, simplicity of field procedures, and minimal training of interviewers is described. The objective is comparison of appropriate subgroups within the population of a given city. It is not recommended for estimation of city-wide averages or for comparison of results for one city with those of another.

Certain biases are encountered in allocation of primary sampling units to census tracts and in selection of households within primary sampling units. When conditions of extreme heterogeneity in distribution of dwelling units occur within census tracts and within primary sampling units, careful study and exercise of sound judgment must modify routine application of the methodology.

A survey conducted in Boston in March, 1959, was described to illustrate the procedure and analysis. Similar surveys were conducted in 36 cities located in various parts of the country.

Summary results, given for 26 surveys, indicate that the problem of low immunization rates in young children in lower socioeconomic groups has been widespread.

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Other members of the CDC Statistics Section staff who provided technical guidance in field surveys include Arthur Cohen, Elmer C. Hall, Paul E. Leaverton, William S. Mallios, and Sarah F. Welch. Ernestine Tomlinson and Sarah Wingo provided assistance in many ways.

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This study was made to evaluate the hemagglutination inhibition and neutralization technics as serologic procedures for the diagnosis of infections with para influenza 1 and 3 viruses. While these technics were found to be sensitive along several lines, etiologic diagnosis was hampered by heterotypic responses. Specific etiologic diagnosis can best be made by virus isolation.

SEROLOGIC RESPONSE OF INDIVIDUALS INFECTED WITH PARA INFLUENZA VIRUSES

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THE PARA influenza viruses Types 1 (hemadsorption Type 2), 2 (CA), and 3 (hemadsorption Type 1) are newly recognized members of the myxovirus family which have been recovered from persons with various types of respiratory illness.[1,2] These agents possess certain biologic and antigenic properties which separate them from the influenza viruses.[3,4] The para influenza viruses appear to play an important role in childhood respiratory illness. On a year-round basis, para influenza 1 and 3 viruses have been isolated from 6 per cent of children with all types of respiratory illness, and during certain months the recovery rate from children with upper respiratory illness has been as high as 20 per cent.[5,6] Para influenza 1 virus has been the most important single agent associated with acute laryngotracheobronchitis (croup) of infancy and early childhood; this agent has been recovered from 20 per cent of patients with this syndrome.[5,7] Recently para influenza 1 virus has been recovered from adults with febrile upper respiratory illness.[8,9]

During the course of a study of the microbiologic experience of infants and children under three years of age in a welfare nursery, we had the opportunity to observe outbreaks of infection with para influenza 1 virus and with para influenza 3 virus. This report will describe an evaluation of the available serodiagnostic procedures employing specimens derived from the nursery outbreaks.

Throat swab specimens were obtained from the nursery children at weekly intervals and at the onset of a febrile illness (temperatures of greater than 100.6 F rectally). These specimens were tested for the presence of virus in monkey kidney tissue culture employing the hemadsorption technic. Neutralization tests were performed with fourfold dilutions of serum which were incubated for one hr at room temperature with 10 TCD_{50} of para influenza 1 virus or 100 TCD_{50} of para influenza 3 virus.

Three days following inoculation of this mixture into monkey kidney tissue cultures the presence of virus was tested for by hemadsorption. The serum antibody end point was considered the highest dilution of serum that prevented hemadsorption. Complement-fixation (CF) tests employed four units of antigen, two full units of complement, and overnight fixation at 4° C. Para influenza 1 CF antigen was prepared from infected monkey kidney cultures, while para influenza 3 CF antigen was prepared from infected KB cultures.[2] Hemagglutination-inhibition (H-I) tests were performed with four units of antigen and a one-hr incubation of the serum-virus mixture at room temperature before the addition of red cells. Chicken erythrocytes were used for para influenza 1 hemagglutinin and guinea pig red cells for para influenza 3 hemagglutinin. Sedimentation of red cells was allowed to occur at 4° C. Serum inhibitors for the para influenza viruses were removed by treatment with 25 per cent kaolin.[10]

A serum sample was available from almost all infants and children prior to the nursery outbreak, and this specimen was tested simultaneously with a serum obtained at least from two to three weeks after virus isolation, or from two to three weeks after the outbreak was over if virus isolation was unsuccessful. A fourfold or greater increment in level of antibody between the sera obtained before and after the outbreak was considered indicative of infection.

Para Influenza 1 Outbreak

Para influenza 1 virus was first detected in the nursery population on May 30, 1958. This agent spread slowly through the group, since 41 days elapsed between the first and last infection of infants and children who were in residence when the virus was introduced. The mean weekly population during this interval was 52. Approximately three-quarters of the infections were associated with a febrile upper respiratory illness lasting from one to seven days. Acute laryngotracheobronchitis (croup) was not observed, although 45 para influenza 1 infections were detected: 24 by virus isolation with serologic confirmation, four by virus isolation where serologic testing was not performed, and 17 by serologic means where virus isolation was unsuccessful.

Table 1 summarizes the results of three serologic procedures in the diagnosis of para influenza 1 infection. The technics for performing the CF and HI

Table 1—Serologic Diagnosis of Para Influenza 1 Infection Outbreak in Junior Village Orphanage Nursery*

	Fourfold or Greater Rise in Antibody by Indicated Technic					
	Neutralization in Tissue Culture		CF		H-I	
Virus Recovery	Number Tested	Number Positive	Number Tested	Number Positive	Number Tested	Number Positive
Yes	24	22	22	4	23	20
No	37	14	37	4	35	13
Total	61	36	59	8	58	33

* Total number of children with serologic evidence of infection = 41.

Table 2—Comparison of Three Serologic Technics in the Diagnosis of Para Influenza 1 Infection in Nursery Group

Technic	Number Tested	Number with Antibody Rise	Fourfold or Greater Rise in Antibody			
			Both Technics	CF Only	Neutralization Only	H-I Only
Neutralization and H-I	57	36	30	—	3	3
CF and H-I	58	35	6	3	—	26
Neutralization and CF	58	36	6	2	28	—

tests were standard methods which we have employed for the study of other myxoviruses.[2,10] A modification in the neutralization technic, however, was necessary for the study of para influenza 1 neutralizing antibody in children. When 100 TCD_{50} of virus was used in the neutralization test, the level of antibody in the postoutbreak sera was low and rises in antibody following virus isolation were uncommon. A decrease in the quantity of virus employed to 10 TCD_{50} resulted in higher levels of antibody in the postoutbreak sera and rises in neutralizing antibody were detected for 22 of 24 nursery occupants from whom virus was recovered, as shown in Table 1. With the modification just described the neutralization technic appeared to be a sensitive indicator of para influenza 1 virus infection. The H-I test was also effective in the serodiagnosis of para influenza 1 virus infection, while the CF technic was considerably less sensitive than the other methods.

Not all individuals were tested by all three serodiagnostic technics. For this reason the technics were compared one to another only for those individuals who were so tested. Table 2 presents the results of such a comparison. The neutralization and H-I procedures appeared to be equally sensitive for detection of para influenza 1 infection. The CF technic was approximately one-fourth as sensitive as either of the other methods. Although the CF technic proved to be relatively insensitive, a small number of infections was diagnosed only by this method. For detection of the maximal number of infections by serologic means it was necessary to employ all three methods.

The relative ineffectivenes of the CF test was not evident when infants and children with acute laryngotracheobronchitis associated with para influenza 1 virus infection were studied.[4] As shown in Table 3, 94 per cent of such patients with severe illness developed CF antibody. It is possible that the severity of illness associated with para influenza 1 infection may influence the level of CF antibody which develops during convalescence.

Table 3—Effect of Severity of Illness upon Development of CF Antibody for Para Influenza 1 Virus

Clinical Illness from which Para Influenza 1 Virus Recovered	No. of Children Tested	CF Antibody Rise	
		No.	Per cent
Acute laryngotracheobronchitis (Croup)	17	16	94
Upper respiratory illness*	22	4	18

* 16 infections associated with fever (temperature >100° rectal).

Table 4—Effect of Previously Acquired Neutralizing Antibody upon Infection with Para Influenza 1 Virus as Measured by the Neutralization Technic

Preoutbreak Neutralizing Antibody		Fourfold or Greater Rise of Neutralizing Antibody After Outbreak	
Reciprocal of Titer	No. in Group	Yes	No
<4	54	35	19
8-16	0	—	—
32-128	7	1	6

The neutralizing antibody status of the nursery occupants prior to the outbreak is shown in Table 4. Of the infants and children who were less than three years of age, 89 per cent did not possess neutralizing antibody detectable at a final serum dilution of 1:4. Neutralizing antibody appeared to protect against infection during the outbreak; 66 per cent of infants and children without neutralizing antibody prior to the outbreak developed such antibody following the outbreak, while only 14 per cent of those with neutralizing antibody before the outbreak developed a positive serologic response. It is of interest that 34 per cent of the individuals without neutralizing antibody prior to the introduction of para influenza 1 virus into the nursery failed to be infected during the outbreak as measured by the neutralization technic.

Para Influenza 3 Outbreak

The para influenza 3 virus outbreak from which serum specimens were obtained for an evaluation of serodiagnostic methods occurred in November and December of 1957. The circumstances of this outbreak with the occurrence of febrile upper respiratory illness and pneumonitis have been described previously.[2] Para influenza 3 virus spread through the nursery more rapidly than did para influenza 1 virus; only ten days elapsed between the first and last infection among the nursery occupants who were in residence at the time the virus was introduced. Subsequent infections which occurred over the next 21 days involved new admissions to the nursery.

Table 5 presents the results of three serologic procedures in the diagnosis of para influenza 3 infection. The neutralization and H-I technics measured a rise in antibody for each individual from whom virus was recovered. The CF technic also appeared to be a sensitive serologic procedure in that almost all infants and children who yielded virus also developed a CF antibody rise.

Table 5—Serologic Diagnosis of Para Influenza 3 Infection Outbreak in Junior Village Orphange Nursery*

	Fourfold or Greater Rise in Antibody by Indicated Technic					
	Neutralization in Tissue Culture		CF		H-I	
Virus Recovery	Number Tested	Number Positive	Number Tested	Number Positive	Number Tested	Number Positive
Yes	28	28	30	29	30	30
No	23	9	24	10	24	11
Total	51	37	54	39	54	41

* Total number of children with serologic evidence of infection = 42.

Table 6—Comparison of Three Serologic Technics in the Diagnosis of Para Influenza 3 Infection in Nursery Group

Technic	Number Tested	Number with Antibody Rise	Fourfold or Greater Rise in Antibody			
			Both Technics	CF Only	Neutralization Only	H-I Only
Neutralization and H-I	51	39	36	—	1	2
CF and H-I	54	42	38	1	—	3
Neutralization and CF	51	38	35	1	2	—

A comparison of the neutralization, CF, or H-I procedure with each of the other technics is presented in Table 6. All three serologic tests appeared to be equally effective in detecting developments of para influenza 3 antibody. Each technic was capable of detecting an occasional serologic response that could not be measured by one of the other technics. The effectiveness of the CF test for para influenza 3 virus is in marked contrast to the situation observed for para influenza 1 virus.

The neutralizing antibody status of the nursery occupants prior to the outbreak is shown in Table 7. Of the infants and children who were less than three years old, 61 per cent possessed neutralizing antibody for para influenza 3 virus prior to the introduction of this agent into the nursery group. This prevalence of neutralizing antibody is greater than that observed for para influenza 1 virus (11 per cent) prior to its introduction into the nursery population. All the individuals who lacked neutralizing antibody were infected during the outbreak. In addition, all infants and children with levels of 1:8 to 1:32 before the outbreak were infected. Higher levels of neutralizing antibody in the range 1:64 to 1:512 appeared to confer some protective effect, since only eight of 22 individuals with such levels developed a serologic response indicative of infection. The frequency with which infection occurred among persons possessing antibody suggests that reinfection with para influenza 3 virus was not an uncommon event. Analysis of pre-exposure neutralizing antibody status in relation to the occurrence of febrile illness for this and another more extensive outbreak, to be presented in detail in a future publication, indicated that approximately 78 per cent of first infections were associated with a febrile illness, whereas such illness was considerably less common during episodes of reinfection.[6]

Development of Heterotypic Para Influenza Antibody

Previous investigations employing serum from infected animals indicated that para influenza 1 and 3 viruses were distinct from each other.[2,3] Evidence for the antigenic distinctness of these viruses is presented in Table 8 which summarizes representative CF and HI tests performed with serum pools from infected guinea pigs. A relation between these viruses was suggested, however, when 10 of 17 children with croup from whom para influenza 1 virus was recovered developed para influenza 3 CF antibody.[7] Similarly, three of five adults infected with para influenza 1 virus developed para influenza 3 CF antibody.[3] These findings are consistent with the concept that the para influenza viruses and other noninfluenza myxoviruses comprise a group in which common antigens exist.

Table 7—Effect of Previously Acquired Neutralizing Antibody upon Infection with Para Influenza 3 Virus as Measured by the Neutralization Technic

Preoutbreak Neutralizing Antibody		Fourfold or Greater Rise of Neutralizing Antibody after Outbreak	
Reciprocal of Titer	No. in Group	Yes	No
<8	20	20	0
8-32	9	9	0
64-512	22	8	14

Infants and children involved in the para influenza 1 and 3 virus outbreaks were tested for heterotypic HI and CF antibody to determine the frequency of heterotypic responses and to assess the importance of such responses in the serodiagnosis of infection. Table 9 presents the results of tests for heterotypic antibody response. Approximately one-third of the individuals who developed HI antibody for the infecting para influenza 1 virus also developed a response for para influenza 3 virus. The devolopment of heterotypic HI antibody for para influenza 1 by persons infected with para influenza 3 virus occurred somewhat less often, that is, in approximately 12 per cent of such infections. No difficulty was encountered in serodiagnosis with the HI technic when a single response was observed. In the 20 per cent of instances where a double response occurred, para influenza 1 virus was the infecting agent twice as often as was para influenza 3 virus.

Heterotypic responses as measured by the CF technic presented a more complex and potentially misleading picture than HI because of the poor CF antibody response to para influenza 1 virus. For example, 17 infants and children developed a rise in CF antibody following infection with this virus, but the responses of nine were directed solely to the heterotypic para influenza 3 virus. These nine individuals were infected with para influenza 1 virus, since the agent was recovered from five of the group, while the remaining four persons developed HI and/or neutralizing antibody for this agent. CF antibody response to para influenza 3 infection was seldom complicated by heterotypic para influenza 1 antibody.

Serodiagnosis by CF of mild or moderately severe illness associated with para influenza infection must be made with caution because of the tendency to underestimate para influenza 1 infection and to overestimate para influenza 3 infection. Such tendencies are not inherent in the HI technic, but here the problem of heterotypic re-

Table 8—Lack of Relation of Para Influenza 1 and 3 Viruses in Tests with Serum from Infected Guinea Pigs

Guinea Pig Serum	Reciprocal of Antibody Titer with Four Units of Antigen					
	CF					
	Soluble Antigen		Tissue Culture Antigen		H-I	
	Para Influenza 1	Para Influenza 3	Para Influenza 1	Para Influenza 3	Para Influenza 1	Para Influenza 3
Para influenza 1 (HA-2)	320	<10	1280	<10	1280	<10
Para influenza 3	<10	80	<10	2560	<10	320

Table 9—Development of Heterotypic Para Influenza Antibody Following Infection with Para Influenza 1 or 3 Virus

Infection	Fourfold or Greater Rise in Antibody							
	H-I				CF			
	Total	Both Viruses	Para Influenza 1 Only	Para Influenza 3 Only	Total	Both Viruses	Para Influenza 1 Only	Para Influenza 3 Only
Para influenza 1	34	10	23	1	17	3	5	9
Para influenza 3	41	5	0	36	39	1	0	38

sponses prevents accurate serodiagnosis in 20 per cent of instances. In this group a diagnosis of para influenza 1-3 infection can be made, with the infecting type unspecified. It should be emphasized that the CF procedure is a sensitive technic for the diagnosis of severe illness associated with para influenza 1 infection; in these instances an underestimation of para influenza 1 infection does not occur.

Heterotypic para influenza 3 CF responses following para influenza 1 infection appeared to be related to the occurrence of previous Type 3 experience, as shown in Table 10. Such Type 3 responses probably represent development of antibody to a shared antigenic component or to shared antigenic components by individuals who have had previous experience with this antigen or these antigens during a prior Type 3 infection. Studies now in progress involving serial infection of animals with various para influenza viruses have yielded results which are consistent with this interpretation.[11]

Summary

An evaluation of the hemagglutination inhibition and neutralization technics revealed them to be sensitive serologic procedures for the diagnosis of infection by para influenza 1 and 3 viruses. Complement fixation proved to be a sensitive method for serodiagnosis of para influenza 3 infection but not for para influenza 1 infection unless the associated illness was of a severe nature. Etiologic diagnosis by serologic means was hampered by the occurrence of heterotypic responses, which were more commonly observed following para influenza 1 infection. Of the two methods examined for such heterotypic responses, the hemagglutination inhibition technic was preferable to the complement-fixation procedure, since the latter test tended to underestimate the occurrence of para influenza 1 infection and to overestimate para influenza 3 infection. In view of the 20 per cent heterotypic response rate observed in the hemagglutination inhibition test, it would appear that specific etiologic diagnosis can best be established by virus isolation.

Table 10—Effect of Previous Experience with Para Influenza 3 Virus upon Development of Heterotypic CF Antibody to this Agent Following Para Influenza 1 Infection

		Para Influenza 3 H-I Antibody Present Prior to Para Influenza 1 Infection	
		Yes	No
Para influenza 3 CF antibody rise following para influenza 1 infection	Yes	11	1
	No	13	14

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Things Haven't Changed Much Since 1904—Demand Has Gone Far Beyond the Supply

To secure health for those he loves or for himself is a most vital matter in the life of any man. Next to eternal life is the desire to be free from disease. All pleasure is defeated by pain . . . The restless ambitions of Americans, the haste with which they eat, walk, drive, and sleep make our people especially subject to all ills the flesh can hold. The Chinese idea that we should pay the physician only while he keeps us well is obtaining so far as to put thousands of doctors into salaried positions to study and to put in force preventive methods . . . In the practice of medicine the demand has gone far beyond the supply.

(RUSSELL H. CONWELL, *The New Day*, Griffith & Rowland, Philadelphia, 1904.)

Can preserved erythrocytes be used for routine diagnostic testing? This study endeavors to answer the question. According to the authors, tests show that this is quite possible, and they recommend further trials in routine laboratory situations.

A STUDY ON THE DETECTION AND SPECIFICITY OF ANTIBODIES TO SHIGELLA FLEXNERI TYPES USING PRESERVED POLYSACCHARIDE-SENSITIZED HUMAN ERYTHROCYTES

Viola Mae Young, Ph.D.; Harriette C. Gillem, M.S.; Eugene D. Massey; and Hinton J. Baker, M.D., D.Sc.

SINCE the introduction by Flick[1] in 1948, of preserved erythrocytes for the study of influenza A virus hemagglutinating activity, various modifications and applications have appeared in the literature. Cole and Farrell[2] overcame the spontaneous agglutination of the formalinized red blood cells encountered by Flick by dispersing the cells in a Waring blendor for 60 minutes. Protein antigens were then coupled to the preserved cells by the use of tetrazotized benzidine. Later McKenna[3] treated the preserved erythrocytes of Flick[1] with tannic acid to enable them to absorb bovine serum albumin and bovine gamma globulin. He still encountered some spontaneous agglutination. Cox[4] modified the formalin method to enable the use of preserved sheep erythrocytes for the titration of heterophile antibodies in infectious mononucleosis. Feeley, et al.[5] adopted the preservation method of Cox,[4] which eliminated much of the hemolysis and spontaneous agglutination, to prepare red blood cells for the enterobacterial hemagglutination test. The cells were sensitized with pathogenic Escherichia coli, Shigella flexneri, and Salmonella antigens, and remained stable for several months. Sieburth[6] used the same method for stabilizing standardized sensitized chicken erythrocytes for the Salmonella indirect hemagglutination test.

The advantages of stable erythrocytes which can be used over a long period of time, either readily available for sensitizing with fresh antigen preparations, or previously sensitized with one or more antigens for routine serum testing, are obvious. The present study was undertaken to determine the applicability of this technic to routine use in clinical laboratories for the detection of a rise in antibody titer in cases of bacillary dysentery.

Method

Essentially the method used for preparation of the preserved human erythrocytes (PHE) was the same as that employed by Feeley, et al.,[5] except that

triethanolamine buffered saline (TBS)[7] was substituted for phosphate buffered saline. The technic consists of the following: human, outdated group O Rh negative blood in acid citrate dextrose solution as preserved by the Red Cross was diluted in half with TBS which had been filtered for sterility. To 100 ml of the resulting diluted cells was added 40 ml of formaldehyde which had been made isotonic with an equal quantity of twice concentrated TBS. The cell suspension was then incubated for two hours in a 37° C water bath and swirled every 15 minutes to insure thorough mixing. The erythrocytes turned brown during this period. The browned erythrocytes were centrifuged, washed four times with TBS, resuspended, sedimented, and decanted over three 48 hour intervals. A 10 per cent suspension was then made in TBS to which 0.3 per cent formalin had been added as a preservative. This suspension was kept at 4° C throughout the period of study.

Preparation of the polysaccharide extracts used to sensitize the PHE has been described elsewhere.[8] Briefly, this consisted of heating smooth, agar grown saline suspensions of the bacteria together with an equal quantity of 0.1 N NaOH at 100° C for 70 minutes. The material was then cooled, adjusted to pH 7.0, dialyzed, centrifuged, and the supernate Seitz filtered. The extract was carefully standardized with hyperimmune rabbit antiserum to determine the lowest concentration giving a high stable titer.

Single polysaccharide sensitized cells were prepared in the following manner. The formalinized red cell suspension was washed three times in TBS and resuspended to make a 10 per cent suspension. This suspension was then added to an equal amount of polysaccharide extract which had already been diluted to its optimum reactive capacity as determined by standardization. The mixture was placed in a 37° C water bath for a two hour sensitization period, the cells washed again three times in TBS and resuspended to make a 1 per cent cell suspension in the same buffer to which 0.3 per cent formalin had been added. This stock of preserved sensitized human erythrocytes (PSHE) was stored at 4° C and used without further alterations or washing for the six month testing period.

PHE were also simultaneously sensitized[9] with polysaccharide antigens by exposing the washed 10 per cent formalinized cell suspension to an equal quantity of five different polysaccharide extracts. The polysaccharide solutions were prepared so that each was in its appropriate concentration for optimum sensitization.

Fresh human erythrocytes (FHE) were sensitized in the same way as the formalinized cells except that the fresh blood was preserved in Alsever's solution[10] and no formalin was added throughout the process.

Hemagglutination (HA) tests with both FHE and PHE were carried out in serial (twofold) dilutions of the hyperimmune rabbit antiserums and patient's serums. Equal amounts of cell suspensions and diluted serums were incubated for two hours in the 37° C water bath. The readings to determine serum antibodies, however, were carried out differently for the two types of cells. In tests performed with fresh cells the pattern formed by the clumped cells was noted, but the tubes were then tapped lightly and only those tubes showing complete agglutination of all the red blood cells was regarded as positive. The cells preserved by formalin do not have sufficient binding power to retain their adherence when tapped, so these tests were read by pattern only. Parallel readings made of the fresh blood cell tests to compare titer end points read by pattern and by complete clumping of the cells showed but little variation, so this latter procedure which had long been

Table 1—Six-Month Evaluation of Single and Polyvalent Sensitized Preserved Human Erythrocytes

Antiserum	Shigella flexneri HA Reactions									
	1a	1a	1b	1b	4a	4a	4b	4b	5	5
Polysaccharide antigen	1a	Pv*	1b	Pv	4a	Pv	4b	Pv	5	Pv
January	20,480†	10,240	2,560	2,560	10,240	2,560	2,560	2,560	5,120	5,120
February	10,240	5,120	1,280	1,280	2,560	1,280	1,280	1,280	5,120	2,560
April	10,240	5,120	2,560	2,560	2,560	2,560	2,560	640	10,240	10,240
May	10,240	10,240	2,560	2,560	10,240	10,240	2,560	1,280	5,120	5,120
June	10,240	10,240	5,120	2,560	5,120	5,120	1,280	640	5,120	5,120

* Pv = polyvalent.
† Reciprocal of the highest serum dilution yielding a definitive pattern.

in use in our laboratory was retained. Also, parallel tests had been set up to determine the optimum incubation time and temperature for the HA test using PHE and Shigella polysaccharide extracts. Feeley, et al.,[5] recommended that the HA tests be incubated for 30 minutes at room temperature. Readings of our tests at 30 minutes gave end points ranging from identical to three tubes lower than those at two hours. Furthermore, the cells had not all settled by the 30 minute period, thereby rendering the reading by pattern more difficult. Temperature seemed even more critical than time. A very few of the titers obtained by incubation at room temperature were the same as those obtained by incubation at 37° C, but most were from two to six tubes lower. Optimum conditions for the present HA studies were, therefore, incubation for two hours at 37° C. It should be noted that it is unnecessary to inactivate serums that will be tested with PHE since such cells are not subject to hemolysis.

Results and Discussion

The methods described above were employed to determine HA titers obtained with single polysaccharide sensitized preserved cells as compared with titers obtained when such cells were simultaneously sensitized with polysaccharide antigens prepared from Sh. flexneri 1a, 1b, 4a, and 5. Both single and polyvalent sensitized cells were tested for stability for a period of six months. Table 1 shows the results of the six month evaluation using hyperimmune rabbit antiserum for the testing. It can be seen that while slight variations occur there are no real differences in titer between tests run with single and polyvalent sensitized cells. Also the titers obtained in January and June usually are identical or show a one tube variation. In only one instance was a two tube difference seen. Flick[1] found that erythrocytes preserved by his method of formalin treatment were useful for a period of two years. It is probable that the PSHE prepared according to Feeley's method[5] could also be used for considerably longer than six months.

After the stability of the preserved erythrocytes was established, the next step was to determine their utility in the serology of actual cases of bacillary dysentery. Serums from an epidemic of Sh. flexneri 6 provided the opportunity for such an evaluation. The results are recorded in Table 2. Comparative

agglutination and HA tests had been carried out previously on these serums. In those instances where sufficient serums still remained for testing, the cells which had been sensitized six months before with polysaccharide extracts from Sh. flexneri 6 were used for HA tests. As previously reported, the agglutination tests gave very poor results while the HA tests gave high titers.[11] No real difference could be detected between the original fresh erythrocyte HA test and the HA test using preserved erythrocytes six months old.

To further verify the results obtained with the Sh. flexneri 6 patients, five serums from children with sporadic infection of Sh. flexneri 3 were tested. These are shown in Table 3. The observed variation in titer is minimal with the exception of the acute phase serum of patient No. 2. This shows that rare differences can occur.

While much is known about the common constitutents of some of the Sh. flexneri polysaccharides,[12] and while the cross agglutination reactions of these strains in hyperimmune antiserums are well established,[13] the homologous and heterologous hemagglutinin response to Sh. flexneri infections in patients remained to be determined. Such studies were carried out on serums from a Sh. flexneri 6 patient, using HA antigens prepared from Sh. flexneri types 1b, 2a, 3, and 4a, all of which are reported to give cross-agglutination reactions.[13] Antibody response to the homologous strain Sh. flexneri was also tested. The results are given in Table 4. The only one of the strains which did not show a rise in antibody titer is Sh. flexneri 2a which retained a titer of 32. Sh. flexneri types 3 and 4a both showed a two tube rise in hemagglutinin titer, the 1b a three tube rise. The homologous Sh. flexneri 6 strain stimulated a four tube rise which was not a great deal higher than the others, but does reach a significant level. It is obvious that the specificity of the HA test for strains within the Sh. flexneri group is not

Table 2—Serological Studies of Patient Serums Obtained from an Epidemic of Shigella flexneri 6

Pt. No.	Acute Serum Titers			Convalescent Serum Titers		
	Agglutination	FSHE	PSHE	Agglutination	FSHE	PSHE
1	—	128	64	16	256	256
2	0	0	0	0	256	256
				0*	128*	128*
3	0	0	0	—	—	—
4	0	64	64	—	—	—
5	0	1,024	2,048	64	1,024	512
6	0	32	32	0	128	128
7	0	1,024	1,024	16	1,024	—
8	0	128	256	8	512	1,024
9	0	0	0	0	128	128
10	0	0	—	0	1,024	1,024
11	—	32	128	0	64	128

—= Test not done; serum not available.
FSHE = Fresh sensitized human erythrocytes.
PSHE = Preserved sensitized human erythrocytes.
* Second convalescent serum drawn on patient No. 2.

Table 3—Serological Studies of Patient Serums Obtained from Sporadic Cases of Shigella flexneri 3*

Patient No.	Serum	Hemagglutination Titers FSHE	PSHE
1	Convalescent	512	128
2	Acute	32	256
	Convalescent†	256	256
3	Acute	16	32
	Convalescent	256	256

* Obtained from Children's Hospital, Washington, D. C.
† Convalescent serums were drawn ten days after the acute serums.
FSHE = Fresh sensitized human erythrocytes.
PSHE = Preserved sensitized human erythrocytes.

Table 4—Homologous and Heterologous Hemagglutinin Response to Shigella flexneri Types in a Patient with Shigella flexneri 6 Infection

Types of Shigella flexneri HA Antigen	Hemagglutination Titers Acute Serum (September 12)	Convalescent Serum (September 22)
1b	128	1,024
2a	32	32
3	64	256
4a	256	1,024
6	64	1,024

strong. This may be explained by the identical polysaccharide constitutents among the Sh. flexneri serotypes.[12]

As previously stated, to establish end points of the HA titer when fresh red blood cells are used, only complete agglutination of all the cells is regarded as positive. The PHE tests, on the other hand, are read by pattern. Figure 1 presents parallel tests using the two types of cells in which the first two tubes are positive; the third tube of each is a ± reading (considered a negative reaction). The fresh erythrocytes gave a positive pattern in this third tube, but agitation revealed incomplete clumping. The last two tubes of each series are negative. It is apparent from this illustration that more experience is required to read the tests with preserved cells accurately. The next three illustrations (Figures 2, 3, and 4) are shown to depict more clearly those features on which the end point reading is based in the PSHE hemagglutination test. Figure 2 shows a positive test and corresponds to the second tube in the preceding illustration. The next one (Figure 3) shows a ± reaction with its early stage in the formation of the typical negative "doughnut." Figure 4 shows the fully developed negative "doughnut" ring. It should be mentioned that patient serums tend to give less easily read end points than the hyperimmune rabbit antiserums, but with experience in the use of this method the results are reproducible.

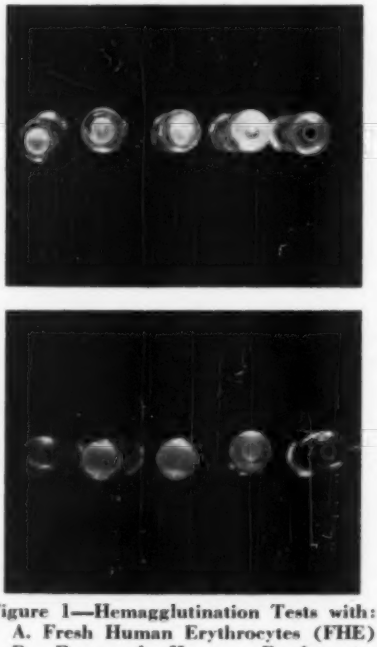

Figure 1—Hemagglutination Tests with: A. Fresh Human Erythrocytes (FHE) B. Preserved Human Erythrocytes (PHE)

Figure 2—Hemagglutination with Preserved Human Erythrocytes: Positive Reaction

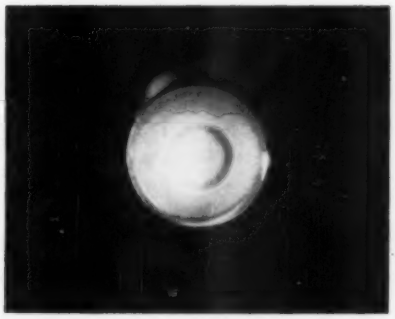

Figure 3—Hemagglutination with Preserved Human Erythrocytes: Plus-Minus Reactions (Read as Negative)

Figure 4—Hemagglutination with Preserved Human Erythrocytes: Negative Reaction

The enterobacterial hemagglutination test has been established as affording an accurate and sensitive test for the detection of antibodies. For example, in the outbreak of Shigellosis reported by Sochard, et al.[11] not a single case would have been diagnosed on the basis of agglutinin response, whereas every individual showed a prompt rise in hemagglutinins to a high titer. Neter[14] has reviewed this subject in detail. With the advent of formalin preserved cells new vistas in the utilization of the HA test have opened. PHE afford a simple, lasting source of cells wherever the supply would be difficult to obtain. They will last for many months in a sensitized or unsensitized state. The potential for their use in smaller or field laboratories is very large. It would be possible for centrally located laboratories to prepare large volumes of preserved sensitized carefully standardized cells for small or field laboratories. In consequence, the results over long periods of time would become more uniform. The smaller laboratories would simply have to add the proper serum dilutions without inactivation to run an effective test. We strongly recommend that this test be given extensive trials under the conditions stated.

Summary

Studies were presented in which formalinized erythrocytes (PHE) sensitized with single or multiple polysaccharide antigens were tested for stability over a period of six months. No real differences or diminution of titer could be detected. Comparative HA tests with fresh and preserved cells carried out on serums from patients with bacillary dysentery gave the same results. The sensitivity and stability of this test, together with the obvious advantages it affords, make it worthy of extensive trial for widespread use as a routine diagnostic test.

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Public Health Is Where People Are

In August, the Tuberculosis Control Service of the San Diego Department of Public Health installed an x-ray machine in the San Diego County Jail to screen all new prisoners for unsuspected active tuberculosis.

In the first 27 days of operation, 1,253 x-rays were taken. Three persons who were unaware that they had the disease were found to have tuberculosis: One had a minimal case; one was moderately advanced; one was far advanced. All three prisoners are now hospitalized and are receiving medical treatment.

The health department expects that "every 400 to 500 jail x-rays will find a person with tuberculosis. Normally, a case is found in our population at large in every 5,000 to 8,000 chest x-rays."

A study over a year of two private-home wells indicated that season of the year is a major factor controlling bacterial content of the water. Further analyses of 2,417 wells corroborated the finding, and the authors discuss the various factors that might bring about this situation.

SEASONAL COLIFORM VARIATIONS IN WELL WATERS

R. A. Voelker; H. Heukelekian; and H. E. Orford, Dr.Eng.

BACTERIOLOGICAL evaluation of private-home well waters is often based on only one standard examination of a 50 ml portion with, when requested, a corroborative analysis shortly thereafter. If, however, the bacterial count of a well varied significantly during a year, the results of a standard examination would be valid only for the time of examination. Whether such variations actually do occur was investigated in the year-long bacteriological analysis of two private-home wells reported here. In another approach to the same question, a statistical study of bacterial tests of more than two thousand private wells in New Jersey over a period of 11 years is also reported.

Experimental

Two types of wells representing two different homes, two types of aquifers, and a previously demonstrated contamination in the standard 50 ml bacteriological analysis were selected. One, a dug well north of Milltown, N. J., in an unconsolidated clayey sand, was 20 feet deep and 3½ feet in diameter. The well had a loosely fitting concrete cover with a vent pipe and a brick lining mortared to a depth of eight feet. The water level generally ranged about five feet below the surface. The ground surface sloped gently downwards to a cesspool 20 feet away, with a dry well for kitchen wastes an additional 20 feet away.

The second, a drilled well in a red shale formation, in Middlebush, N. J., was 175 feet deep, with a water level ranging around 40 feet below the surface. The six-inch casing pipe, open at the top, projected seven inches above the bottom of a sump in the cellar. For the first three months of the test a septic tank and leaching system were operated 50 feet to the east on the other side of the house, after which a new leaching system beginning 50 feet to the west of the well was used.

Bacteriological analyses of samples from each of the wells were made biweekly for a year, with five tubes in each of at least four dilutions to determine the Most Probable Number of coliforms, both presumptive and confirmed; about 25 per cent of the values were secured using three separate series of five tubes each. Elevations of ground water level in each well were also taken biweekly; temperature readings were recorded daily; and rainfall data were

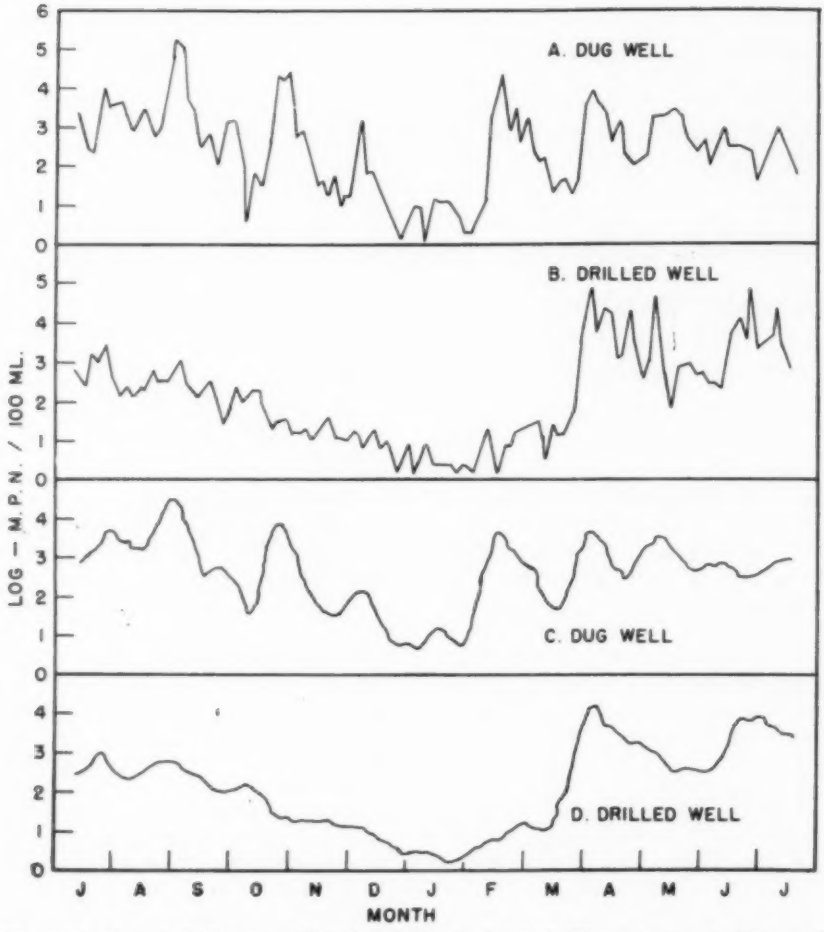

Figure 1—A and B Separate Biweekly (July to July) Coliform Counts in Dug and Drilled Wells, Respectively; C and D Two Week Moving Averages of Coliform Counts in Dug and Drilled Wells, Respectively

secured from the Weather Station of the New Jersey State Agricutural Experiment Station at New Brunswick, some two and five miles away, respectively, from Milltown and Middlebush.

In a second phase of this study a statistical analysis was made of the records of 2,417 samples of well waters mailed to the Department of Sanitation (January, 1940, to December, 1950) by private owners for standard bacteriological analysis (five separate ten-ml portions carried to confirmation).

Results

Variations in MPN of Two Wells

A total of 217 bacterial counts (Most Probable Numbers) for the two wells were plotted (Figure 1A and 1B) by day

of year, to a logarithmic scale. (The numbers used in the figures throughout this report represent the number of organisms found in the brilliant green confirmed test for coliforms.) The relative inaccuracy inherent in MPN determinations may account in part for the jagged character of the curve over short-time intervals, but the extreme range of the MPN values for one year (0 to 180,000 per 100 ml for the dug well and 0 to 90,000 per 100 ml for the drilled well) far exceeds any deviation possible in the laboratory. Since each of the two wells, different both in type and in nature of aquifer, exhibited within one year the identical phenomenon of extreme change in coliform population, it is not unreasonable to expect that any single well will normally, over a period of time, similarly exhibit a wide range in number of coliforms, and to conclude that it is clearly unwise to accept or condemn a well on the basis of a single analysis or even a series of analyses taken within a short-time interval.

Figure 1C and 1D also shows, for dug and drilled wells, respectively, the MPN variations by a four-sample moving average. Plotted against the midpoint of the extreme dates is the geometric average of four successive samples, then the geometric average of the last three of these four samples and the following sample and so forth. These moving averages represent two-week intervals (biweekly analyses). It was found by trial that this procedure best minimizes individual scatter yet adequately represents short-term influences. Figure 1C and 1D shows a basic trend of slow change for both wells, with peaks of varying magnitude and duration. This pattern of change is one of high coliform counts in the summer, averaging as much as 1,000 MPN per 100 ml, followed by a slow but steady decrease to a period, centering around January, with minimum counts as low as zero. Then in turn there follows a slow and steady climb to the following July reaching approximately the count of the previous year in the same month. The coliform counts represented by the peaks in the curve vary in duration from two weeks to a month or even longer. Their absolute magnitudes will vary widely, and it will take as much time for them to return to the basic trend as it did for them to reach a peak.

To indicate more clearly the quality of the basic trend, the series of values below which the wells never dropped (Figure 1) are plotted in Figure 2 to show an estimate of pattern of bacterial number variation.

It is suggested that the coliform content of any well may be expected to follow the basic trend with season shown in Figure 2. Only the absolute magnitude of bacterial numbers would vary about the average yearly level. For the dug well this average level was 60 MPN per 100 ml and for the drilled

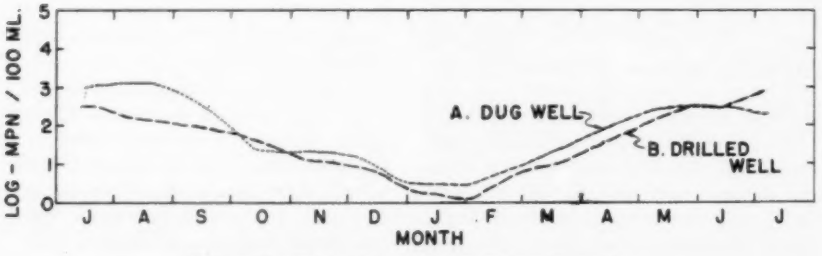

Figure 2—Basic Counts of Coliform Bacteria

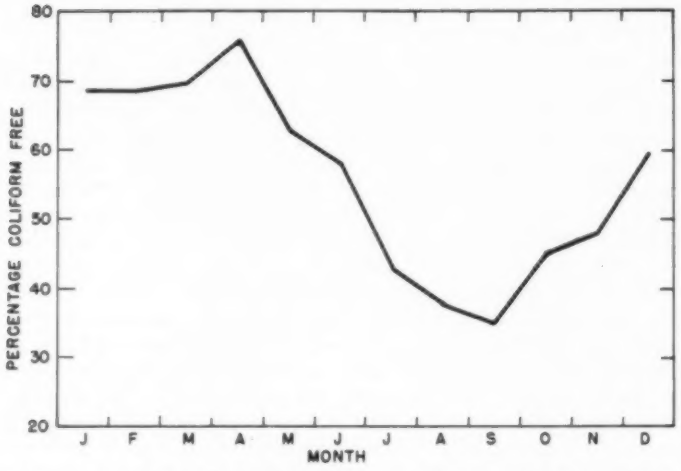

Figure 3—Percentage of Coliform Free Wells in New Jersey: Well Samples by Month

well, 32 MPN. However, if other wells had even higher base levels, due to such factors as geological formation, constant contamination, or inferior protection at the surface, their counts might never reach reasonably low levels. On the other hand, an excellently situated and constructed well might have a low base coliform level, and even always show zero by the standard test of 50 ml. Nonetheless, it might be postulated that with larger volumes of sample it could show coliforms at some seasons of the year, even if at a very low absolute MPN. Every well may be expected, in terms of this study, to exhibit a variation around this basic value with the seasons of the year.

Seasonal Variations in 2,417 Wells

Corroborative evidence that this count pattern is a general one was found in the study of routine bacteriological analyses of waters from 2,417 private wells collected from 1940-1950 throughout the state of New Jersey. In these analyses the wells were grouped on the basis of the month analyzed. The per cent of completely coliform-free wells (not showing a positive gas indication on even one of the five ten-ml portions in the confirmed test) in each of the 12 groups is shown in Figure 3.

Geologic source and type of well are two other factors of primary significance in the bacteriological character of well water. For this reason a preliminary study of the 2,417 wells was made by grouping the wells within each month by major geologic province and major type with 80 items in each group. These preliminary computations showed the pattern of variation by months to be consistently identical, regardless of the geologic factor or of well type; and that dug-well types range more widely about their mean bacteriological performance than do the more stable drilled-well types (Figure 1). In fact, throughout the entire study, wherever distinctions appeared in any characteristic, the dug-well type was found to exhibit higher variability than the drilled-well type.

To investigate the possibility of an

over-riding year-by-year variation (Figure 3 disregards the year in which the analysis was made), subsidiary studies in which the wells were grouped according to year analyses were made. Whether by well type or in total wells, separate yearly values were found to fluctuate much less than did the values by months. For the series of 12 monthly values the standard deviation was 14 percentage points, whereas for the series of yearly percentages, it was only four percentage points.

Further studies by analysis of variance computations, using a three-month seasonal grouping for each of the 11 years, established an actual ratio of the variances of the seasonal means to the experimental scatter of 24.2, whereas that of the yearly means was 0.7. At 95 per cent confidence levels, the ratios of F values were then 8.3 and 0.3, respectively. Statistically, when the ratio of the actual F to the theoretically limiting F is greater than one, a significant effect is indicated; when the ratios are less than one, no significance is indicated. It is safe to conclude, therefore, that a significant difference in bacterial quality by seasons does exist. It seems equally well established, however, that yearly variations, to the contrary, are not critical.

For the sample sizes and absolute percentage values represented in Figure 3, a difference of ten percentage points between two separate values is statistically significant at a 95 per cent level of confidence. The total range of about 40 percentage points, together with the regular character of the pattern of ascending and descending values makes amply clear the importance of season of the year as one of the primary factors affecting bacterial quality.

The independent nature of the data available in the New Jersey survey to corroborate the data of the survey of the two individual wells is interestingly emphasized by noting that the quality under study was different in the two cases. In one case it was the presence or absence of coliforms as measured in a 50-ml sample, in the other it was a direct Most Probable Number count. To relate the New Jersey data to the previously suggested base level count peculiar to an individual well, it is noted that the probabilities are that, with large enough samples for each month from the total group of 2,400 wells, a sample will be secured for that month which is numerically typical in its relation to the separate samples of each of the other 11 months. The 12 resulting percentages will then be comparable to those which would have been obtained if the same set of wells had been sampled every month of the 12-month period. In both studies, therefore, there is agreement in the conclusion that the bacterial quality of well waters will exhibit important variations with the season of the year. Specifically, the early months of the year were those of consistently highest quality, and August and September those of the poorest. There was a pattern of drop in quality over the May and June period, and one of balancing increase in quality in the last months of the year.

Correlation of Bacterial Numbers with Temperature

Figure 4 presents maximum and minimum air temperatures (3 inches above surface) and the soil temperature (24 inches below surface) and Figure 5 presents the rainfall data obtained from the Rutgers Weather Station. A visual comparison of the temperature trends with the coliform counts in Figure 2 suggests a very high order of correlation. This could be established by an evaluation of the sample correlation coefficient r. Correlations of the MPN values in logarithmic form (Figure 2) computed for five-day intervals and temperatures for corresponding days

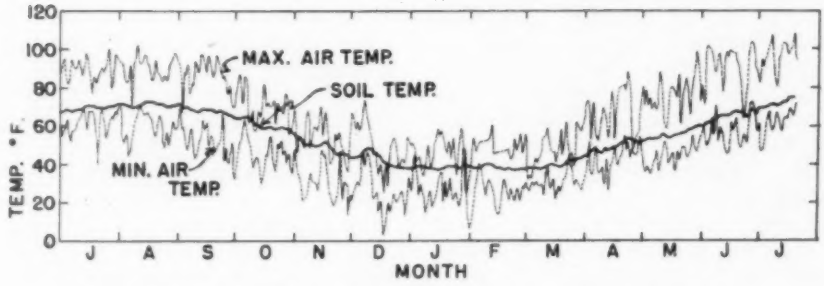

Figure 4—Air and Ground Temperature at New Brunswick, N. J.

(Figure 4) resulted for dug and drilled wells, respectively, in a r of 0.90 and 0.90 for ground temperatures 24 inches below the surface and 0.86 and 0.88 for air temperatures 3 inches above the surface. Statistically the maximum possible absolute value of r is 1.0, and since at 95 per cent confidence the lower limiting value of r is 0.23 with 70 items, there is clearly a strong relationship between bacterial numbers and temperature.

But there may be objections to any simple imputation of a direct relationship. For example, the annual range of ground temperatures decreases rapidly in the first few feet below the surface and then tends to level off. The annual range at 30 feet depth will usually be less than one degree Fahrenheit. At the depths of the two wells studied, the ground water temperatures, therefore, will vary over a year less than do those closer to the surface. Additional pertinent information consists of biweekly readings of tap water temperatures. Around the yearly averages of 58 and 61 degrees Fahrenheit for the two wells, the total annual ranges varied only ten and five degrees, respectively. Although there are some yearly variations in the ground water itself, which will follow qualitatively those near the surface, it can be expected that the relatively narrow range about the absolute magnitude of temperature to which the organisms are subjected underground makes questionable any assumption of an important degree of differential bacterial inhibition operating within the water itself throughout the year.

Possibly a more promising explanation of the basic trend is the suggestion that while the death rate of the coliforms may be fairly constant below the surface in the ground-water itself, there will be a variation throughout the year in the concentrations of bacterial contamination entering the aquifer. Within the water entering the aquifer from the surface or otherwise, bacterial numbers may be higher during the more favorable environment of the warmer months. Then, even with a constant subsequent death rate, the absolute numbers of organisms remaining will be higher.

Whether or not such an explanation will suffice, there seems to be no question of the existence of a gross factor, varying in effect throughout the year and related either directly or indirectly to temperature, which is equally operative on all wells.

Short-Term Coliform Peaks

In Figure 1 the dug well typically gave evidence of many peaks, including some of relatively major extent, perhaps five major and six minor peaks,

whereas the drilled well held more closely to the basic trend with only two major and possibly four minor peaks readily distinguishable. There are indications that this secondary effect builds up slowly over a period of one or two weeks before maximum counts are reached; and, that subsequently, the number of organisms decreases at an equal—or sometimes slower—rate. Peaks can be interpreted as the result of a factor or factors that can cause an influx or a development of bacterial contamination: for example, water percolating into the ground water zone could carry surface pollution downwards and produce an influx of bacterial contamination. Even superficially it is clear that departures from the long-term basic trend are in the form of peaks rather than valleys. If valleys did exist they could be interpreted as evidence of the existence of factors which significantly inhibit or destroy the organisms over short periods of time, or possibly a simple dilution effect which would lower the coliform count per unit volume and be particularly applicable during a recharge of ground water by rainfall.

Effects of Rainfall and Water Levels in the Wells

Figure 5 shows rainfall readings during the year, and Figure 6 biweekly readings of water levels in the dug and the drilled wells. Water levels and rainfall both showed a sharp drop on the first of September, which required one month to reach its lowest point; another month was required for recovery. There followed a plateau of high ground water level starting in November, and continuing at a relatively stable level until the beginning of the next June, to be succeeded by a fairly constant lower level during July and August.

These long-term trends, particularly during the six-month high plateau period, were broken into by peaks and depressions, defined very sharply even though not necessarily of considerable magnitude. Not only were the long-term trends of the two individual wells markedly similar, but at numerous points there was a striking identity of the minor fluctuations, and clear evidence of direct response in the wells to all rainfall.

By sliding the tracing of the bar graph of rainfall over the graphs showing water levels, it was established that during the period of long-term lowering of the water level it required some three days for rainfall to show an effect, and five days before all of the percolating water had reached the ground water reservoir. On the other hand, as soon as better stabilization at the high plateau of water level had been reached, there

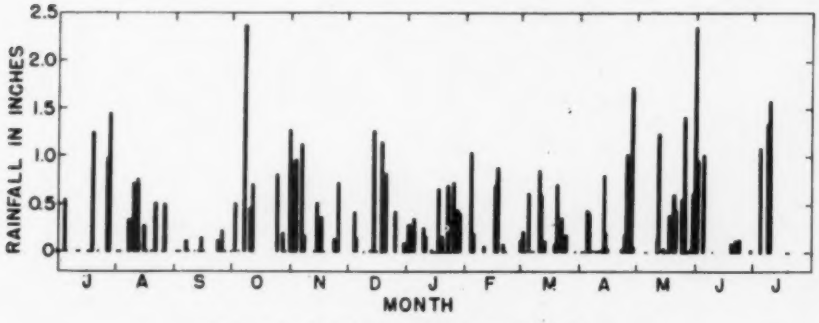

Figure 5—Rainfall at New Brunswick, N. J.

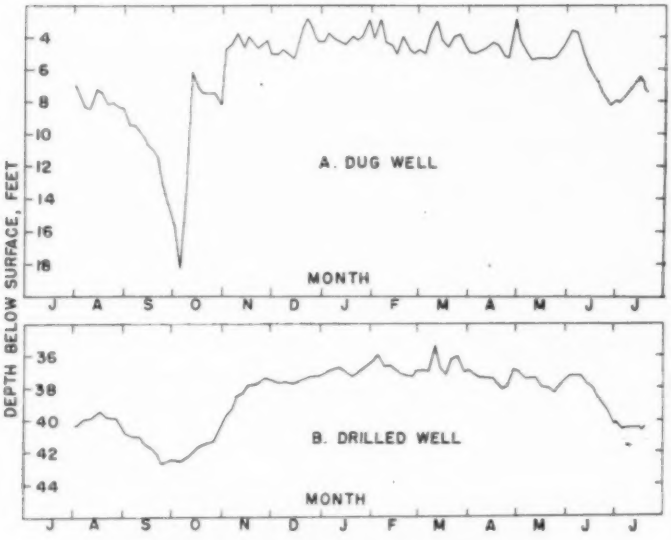

Figure 6—Separate Biweekly Water Levels

was almost no time lag between the rainfall and its influence on the saturated reservoir of ground water, and the completion of its absorption required only about two days.

A comparison, for each well, of ground water peaks (Figure 6) and magnitude of MPN for the same date (Figure 1) with MPN values for adjoining dates, and of declines to stable water level with MPN values for the same date resulted in the following coliform count changes for 52 cases of water level fluctuation: out of 17 rises in coliform count, there were 12 rises in water level and five drops; out of 16 drops in coliform count, there were seven rises and nine drops in water level; in 19 instances there were ten rises and nine drops in water level, and with no corresponding extreme changes in coliform count. In the remaining 33 cases, however, there were 21 (well above simple probability), corroborating the theory that the introduction of surface water tended to raise bacterial numbers, or, conversely, that numbers would decrease as no fresh charges of rain entered and as the water level correspondingly dropped. On the other hand, there is evidence against the theory that dilution could be a factor. If dilution were a factor, there would be a disproportionate number of combinations of water peaks with bacterial drops and of water drops with bacterial peaks. In fact, however, only 12 such cases are below the number that would occur by simple chance alone.

Although the nature of the data available for the study of the secondary coliform peaks necessitates caution in suggesting conclusions, there is evidence in the above-normal identity in simultaneous peaks or in simultaneous drops of water level and coliform density to suggest the importance of surface water contamination. There is some evidence against the theory of dilution as a factor in bacterial quality of wells.

The present data on secondary coliform peaks hopefully will justify further, more intensive experiments with sampling at least every 24 hours, and possibly with firmer bacterial counts obtained by means of the millipore filter technic. Such experiments would have to be carried along for only a short length of time if one accepts the more strongly validated conclusions offered here of the existence of a basic seasonal variation of coliforms in well waters.

Summary and Conclusions

A year's study of each of two private home wells, one dug and one drilled, and in different geological formations, indicate that season of year is a major factor controlling the number of bacteria in a well. MPN values for coliforms, ranging from 0 to 90,000 per 100 ml or more, followed basically a regular trend. High counts were typical of the warmer months, with counts decreasing through the fall to minimum values about January, followed by a steady climb through the spring.

Apparently there is direct relationship of bacterial numbers with air temperature. Studies of bacteriological analyses of 2,417 wells throughout New Jersey corroborated this seasonal phenomenon. By seasons a total range of 40 percentage points difference in coliform-free wells was found, but from year to year no statistically significant variations in average yearly bacterial quality were found.

Short-term secondary peaks of coliform numbers were typical for the dug well and the drilled well. There is some evidence that the effect of rainfall on well water levels in the wells is related to the number of coliforms in the well. Some evidence to support the theory that percolation of rain will cause an influx of surface bacterial contamination was found, but there was no support in the data available for the theory that rainfall can improve bacterial quality by a dilution effect.

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This study is a paper of the Journal Series, New Jersey Agricultural Experiment Station, Rutgers University.

Eleven health textbooks used widely in high schools were studied as to whether the readers found them easy or difficult. Some are too easy, some too difficult, none made provision for growth in reading ability. The authors discuss the implications for school health education.

THE READABILITY OF MODERN HIGH SCHOOL HEALTH TEXTS

Howard S. Hoyman, Ed.D., F.A.P.H.A., and Aubrey C. McTaggart, M.S.

WE ARE becoming increasingly aware of the importance of fitting the health text to the needs, interests, and learning abilities of high school boys and girls. We should not bore good students with a health text that is too easy to be challenging. Nor should we assign to average or poor students a text that is too difficult for them to read with interest and understanding. We assume that high school students can read faster, study more effectively, remember longer, understand and apply better, and enjoy the health text more when it is readable than when it is not.

The problem of gearing the health text to the student is complicated by the marked differences in reading ability of students in the same high school grade. In a typical high school health class the students will often range over five grades or more in their reading ability. Some of the poor students can handle little more than the type of prose found in comic, pulp, and slick fiction magazines. Some of the superior students can read intelligently articles in magazines such as Harper's, the Atlantic Monthly, and some of the scientific and scholarly magazines.

We need more accurate knowledge of the reading difficulty levels of high school health texts if these marked differences in reading ability are to be taken more fully into account in modern health teaching.

Research Methods Used

No research studies using modern multiple-factor readability yardsticks to determine the reading difficulty of high school health texts had been reported prior to 1953. Taylor,[1] Hanson,[2] and Zaharko,[3] made the first pilot studies, under the supervision of the senior author when they were graduate students in health education at the University of Illinois. These studies indicated that some widely used high school health texts were probably too difficult for average and poor readers while others were probably too easy for superior students.

The study reported here was conducted primarily to test the reading difficulty levels of: (1) new editions of texts previously tested by Taylor in 1953, and (2) new health texts. Eleven widely used high school health texts,

dated from 1954 to 1959, were tested for grade level of reading difficulty. Fifteen 100-word random samples were selected from each text. A table of random numbers[4] was used to determine the pages in each text from which the samples were taken. The samples were taken from testable material only—defined as paragraphed material in the body of the text and in the summaries at the end of chapters. The first 100-word sample of testable material on each randomly selected page was tested.

The reading difficulty level of each health text was determined by use of the revised (1948) Flesch Reading Ease formula.[5] Briefly stated, the Flesch formula is based upon two factors: (1) the average sentence length in words, and (2) the average word length—expressed as the number of syllables per 100 words. For each text the average sentence length and the average word length were computed on the basis of all 15 random samples combined. To simplify computation, the Farr-Jenkins Tables[6] were used to find the Flesch Reading Ease score for each text.

The reading ease score was then interpreted by using the Flesch Reading Ease Scale, as outlined in Table 1.[7] For example, Text H was found to have an average sentence length of 16 words, and an average word length (syllables per 100 words) of 163, with a Flesch Reading Ease score of 52.70. Tables 1 and 2 show that Text H was rated as fairly difficult with an estimated 10th to 12th grade level of reading difficulty.

Reliability and Validity of the Flesch Formula

The two kinds of reliability important for readability measurement, using multiple-factor yardsticks such as the Flesch formula, are analyst and sampling reliability. Hayes, Jenkins, and Walker[8] report high analyst-to-analyst reliability (objectivity) for the revised (1948) Flesch Reading Ease formula. They compared experienced with inexperienced analysts and got average correlations of 0.99 for word length, 0.92 for sentence length, and 0.97 for the Flesch Reading Ease scores. To date no studies have been published on sampling reliability as related to the revised

Table 1—Flesch Reading Ease Scale*

Reading Ease Score	Description of Style	Typical Magazine	Syllables per 100 Words	Average Sentence Length	Grade
90 to 100	Very easy	Comics	123	8	5th
80 to 90	Easy	Pulp fiction	131	11	6th
70 to 80	Fairly easy	Slick fiction	139	14	7th
60 to 70	Standard	Digests, Time, Mass nonfiction	147	17	8th and 9th
50 to 60	Fairly difficult	Harper's, Atlantic	155	21	10th to 12th (high school)
30 to 50	Difficult	Academic, scholarly	167	25	13th to 16th (college)
0 to 30	Very difficult	Scientific, professional	192	29	College graduate

* Adapted from Flesch, R. How to Test Readability. (Used by courtesy Harper and Brothers, New York, 1951, pp. 6, 43.)

Table 2—Flesch Reading Ease Indexes of Health Texts in Rank Order

Rank	Text	Flesch Index	Description of Style	Grade Level
1	H	52.70	Fairly difficult	10-12
2	C	54.22	Fairly difficult	10-12
3	E	54.56	Fairly difficult	10-12
4	A	58.62	Fairly difficult	10-12
5	G	59.47	Fairly difficult	10-12
6	K	61.33	Standard	8- 9
7	F	63.36	Standard	8- 9
8	J	64.54	Standard	8- 9
9	I	65.89	Standard	8- 9
10	D	68.09	Standard	8- 9
11	B	73.34	Fairly easy	7

Flesch Reading Ease formula. Limited checking carried out at the University of Illinois in this study, and the earlier studies by Taylor, Hanson, and Zaharko, indicates that 15 random samples will give a reliable measure of the reading difficulty level of a high school health text. However, we need more reliable evidence on the error that can be expected from a different number of random samples per text, so that more objectively based inferences can be made on the best compromise between length of time spent in testing and consistency of scores obtained.

A good discussion of the validity of the revised (1948) Flesch Reading Ease formula is contained in a recent publication by Chall.[9] Flesch designed the formula to predict the relative difficulty of written material and the reading ability necessary for the reader to read and understand it. He has published an excellent article explaining the scientific derivation of his revised reading ease yardstick.[10] Essentially it measures length as a determinant of reading difficulty—the longer the sentences and words the harder the material is to read. It is based on the tested passages in the McCall-Crabbs Standard Test Lessons in Reading.[11] The multiple correlation coefficient of the reading ease formula with comprehension scores on the McCall-Crabbs reading tests is 0.70. This gives a prediction efficiency of about 30 per cent, which is high by research standards in the area of readability.[12] Even though the Flesch formula is a valid measure of reading difficulty, it is at best only a rough measure of readability. According to Chall,[13] the predicted readability indexes on individual passages and books can be expected to have an average prediction error of about one grade, when modern multiple-factor readability yardsticks (such as the Flesch Reading Ease formula) are used.

Reading Difficulty of the Health Texts

Table 2 shows that the 11 high school health texts have reading difficulty levels with a maximum range from grade 7 to grade 12. One text tested as fairly easy, or grade 7; five texts tested as standard (average) difficulty, or grades 8 to 9; and five tested as fairly difficult, or grades 10 to 12. There is a probable difference in reading difficulty of about four or five grades between Texts B and H.

The significance of the mean differ-

ences in reading ease scores for the 11 texts, as a group, was tested by using Edwards' formulas (16.1 and 16.4) for analysis of variance.[14] The F ratio was 4.29. The tabled value for an F ratio with 10 and 154 degrees of freedom is about 1.89, at the 5 per cent level of confidence, so the obtained F ratio was significant. The null hypothesis—that the 165 passages tested were random samples from the same population—was rejected. In other words, the over-all differences in the reading ease score of the 11 texts cannot be accounted for on the basis of random sampling fluctuations alone.

This does not mean, of course, that the Flesch score for each health text differed significantly from the score of each of the others. A formula developed by Lindquist[15] was used to determine how great the difference between any two health texts had to be before the difference was statistically significant. This critical difference was 8.76, at the 5 per cent level of confidence. For example, Text H (Table 2) with a reading ease score of 52.70 differed significantly from any other text with a score of 61.46 or higher (52.70+8.76=61.46). Text B with a reading ease score of 73.34 differed significantly from any other text with a score of 64.58 or lower (73.34−8.76=64.58). Twenty significant differences in reading ease scores were found out of the 55 possible paired combinations of health texts.

The reading ease score for a text provides useful information, but it does not tell the whole story. Many different grade levels of reading difficulty were found in each health text, as shown in Table 3. For instance, all of the texts contained passages at the college level of reading difficulty (grades 13 to 16), as well as some that tested at grade 7, or lower.

Table 4 shows the reading difficulty levels of the 165 random samples tested from the 11 texts. About 53 per cent tested at grade 9, or lower, with about 31 per cent at grade 7, or lower. Approximately 47 per cent tested at grade 10, or higher. About 21 per cent, or one out of five passages, tested at grades 13 to 16, or the college level of reading difficulty.

Table 5 shows the reading ease scores of six new editions of health texts previously tested by Taylor in 1953.

Table 3—The Range of Variation in Grade Levels of Reading Difficulty for the Eleven Texts in Rank Order

Texts	Random Samples	Range of Flesch Indexes	Maximum Range of Grade Levels	Number of Grade Levels Represented
B	15	44-92	5-16	12
G	15	38-80	6-16	11
I	15	40-85	6-16	11
J	15	48-85	6-16	11
A	15	31-71	7-16	10
C	15	33-79	7-16	10
D	15	43-79	7-16	10
E	15	30-73	7-16	10
F	15	47-74	7-16	10
H	15	39-72	7-16	10
K	15	30-79	7-16	10

Table 4—Reading Difficulty Levels of All Samples from the Eleven Textbooks

Flesch Reading Ease Score	Grade Level	Description of Style	Number of Samples	Percentage of Total
0- 29	College graduate	Very difficult	0	0.00
30- 49	13-16 (College)	Difficult	34	20.61
50- 59	10-12	Fairly difficult	44	26.67
60- 69	8- 9	Standard	36	21.82
70- 79	7	Fairly easy	40	24.24
80- 89	6	Easy	10	6.06
90-100	5	Very easy	1	0.60
		Totals	165	100.00

The significance of the mean differences was tested by using Edwards' formulas (13.9 and 13.10) for the t test.[16] Text B is the only one that shows a significant mean difference in the reading ease scores of the two editions, at the 5 per cent level of confidence. The 1957 edition of Text B was several grades lower in reading difficulty than the 1952 edition. The newer editions of Texts C, E, G, and H all test as fairly difficult, or grades 10 to 12.

Progression in Reading Difficulty

Apparently, none of the 11 health texts were based upon a reading progression from easier material at the first to more difficult material toward the end of the text. This point is illustrated in Figure 1, showing the lack of a reading progression in Text F. One might expect some sort of progression in reading difficulty to allow for student growth in reading ability throughout the school semester or year.

The following passages illustrate health reading material with various grade levels of reading difficulty:

Passage 1: Reading Difficulty Level, Grade 7

(Average sentence length = 29 words. Average word length (syllables per 100 words) = 117. Flesch Reading Ease score = 78, or grade 7.)

To your mother and father the day you were born seems just a short time ago, but to you it seems as if there could never have been a time when you did not exist. It is hard to realize that there was a time when you could not breathe, feel, see, hear, and think for yourself.

For 9 months before the day of your birth, however, you grew inside your mother's body in her womb and you could do none of these things for yourself.

Passage 2: Reading Difficulty Level, Grades 8 to 9

(Average sentence length = 18 words. Average word length (syllables per 100 words) = 146. Flesch Reading Ease score = 66, or grades 8 to 9.)

Your vacation may be upset by the common pest, poison ivy and its cousins, the tree-like poison sumac and the bushy poison oak.

The best way to escape discomfort is to avoid the plants. Leaves of both the ivy and the oak come in threes, are about three inches long, green in summer, red in fall, and shiny from their oil. Poison sumac has 7 to 13 leaves and drooping clusters of small white berries through the year.

The oil is what causes the trouble. When this sap touches the skin, usually through breaking or bruising the plant, a characteristic rash occurs in most people (though some can handle the plant without harm). So many people develop a severe skin eruption when exposed that the condition is seldom thought of as an allergy. However, about one person in five is not subject to ivy poisoning.

Passage 3: Reading Difficulty Level, Grades 10 to 12

(Average sentence length = 31 words. Average word length (syllables per 100 words) = 141. Flesch Reading Ease score = 56, or grades 10 to 12.)

The dental profession warns parents that the prevention of decay, and the correction of decay, is as important for the primary teeth as it is for the secondary teeth. A permanent tooth, like any other structure which must last a long time and give good service, must have an adequate foundation in the jaw. When the primary teeth are retained until the usual time for loss, they help the jaw to expand normally so as to accommodate the permanent teeth when they are ready to erupt. If a primary tooth is lost too soon through decay, the jaw may not expand as it should, and the bud of the permanent tooth, which develops beneath the root of the primary tooth, may be injured.

Passage 4: Reading Difficulty Level, Grades 13 to 16

(Average sentence length = 21 words. Average word length (syllables per 100 words) = 180. Flesch Reading Ease score = 33, or college level, grades 13 to 16.)

The terms "germs," "viruses," "bacteria," and "microorganisms" have all been used to denote bacteria. The first two terms have other meanings, however, and their use as synonyms for "bacteria" should be discouraged.

Bacteria occupy a position midway between the animal kingdom and vegetable kingdom, possessing some of the characteristics of each but not all of the characteristics of either. Like the simplest algae of the plant kingdom, they have no definite nucleus and they reproduce by splitting in two. On the other hand, many of them resemble the protozoa of the animal kingdom in spore formation and in the possession of flagella as organs of locomotion. From the physiological standpoint, bacteria resemble the fungi and are usually classed with them in the vegetable kingdom.

Table 5—Comparison of the Reading Difficulty Levels of Two Editions of the Same Health Text

Text	Date	Flesch Indexes	Grade Level	Date	Flesch Indexes	Grade Level	Mean Difference	df	t	Interpretation (5% level)
B	1952	54.46	10-12	1957	73.34	7	18.88	28	3.86	Significant
C	1949	56.41	10-12	1954	54.22	10-12	2.19	30	0.65	Not significant
E	1950	49.12	13-16	1955	54.56	10-12	5.44	28	0.29	Not significant
G	1952	62.97	8- 9	1956	59.47	10-12	3.50	26	0.58	Not significant
H	1952	58.16	10-12	1957	52.70	10-12	5.46	23	1.75	Not significant
J	1950	61.08	8- 9	1957	64.54	8- 9	3.46	31	1.19	Not significant

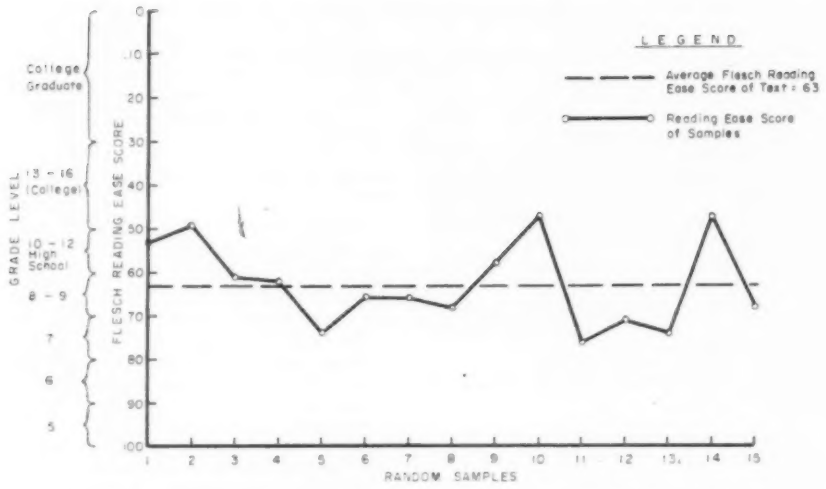

Figure 1—Reading Difficulty Levels of 15 Random Samples from Text "F"

Passage 5: Reading Difficulty Level, College Graduate

(Average sentence length = 26 words. Average word length (syllables per 100 words) = 196. Flesch Reading Ease score = 15, or college graduate level.)

Diagnosis of trichinosis is difficult. The early symptoms of nausea, vomiting, abdominal pain and diarrhea frequently are mistaken for symptoms of influenza, acute inflammation of the kidney, chronic rheumatic fever, food poisoning, infantile paralysis, typhoid fever, tuberculosis or any of several other diseases.

Chief diagnostic aids for the physician in studying suspected cases of trichinosis are tests of the blood for a condition called eosinophilia, meaning an increase of certain white blood cells; a skin test and a blood serum test, (by the complement fixation method or by precipitation) and a microscopic study of small samples of muscle biopsy) for the presence of trichinae.

The passages cited above were all taken from public health pamphlets used as supplementary reference material in high school health classes in a midwestern state.

Summary and Conclusions

Eleven widely used high school health texts were tested for reading difficulty using the revised (1948) Flesch Reading Ease formula. Statistical formulas were used to test the significance of the mean differences, at the 5 per cent level of confidence.

In general the findings agree with the pilot studies by Taylor, Hanson, and Zaharko and indicate that:

1. Some widely used modern high school health texts are probably too difficult for average, below average, and poor readers to use effectively—especially when these texts are used in ninth grade health classes.

2. Other widely used modern high school health texts are probably too easy for above average and superior readers—especially when these texts are used in health classes at the tenth grade, or higher.

3. Apparently, most new editions of modern high school health texts tend to have reading difficulty levels that are substantially the same as the previous edition.

4. None of the texts studied appear to be based upon a reading difficulty progression

from less difficult material at the first of the book to more difficult material toward the end. Apparently, no provision has been made for student growth in reading ability throughout the school semester or year.

5. A single required health text for all students in a given high school grade or class is apt to mean that the text will be too easy for some boys and girls and too difficult for others.

One possibility would be to discontinue the widespread practice of having a single required health text for all students in a given class or grade. Multiple-textbook adoptions could then be made, so that several health texts with different grade levels of reading difficulty could be selected and used. Another possibility would be to reorganize high school health classes on the basis of homogeneous grouping so that health texts could be selected to fit the reading and learning ability of students in a given class.

A health text is a compendium of knowledge that ordinarily does not invite or permit easy student reading. Sometimes one gets the impression that the health text is written more for the teachers than for the students. At best the health text is a tool to help a student study, understand, remember, and apply health facts and principles to his daily life. At worst it either bores him to death because it is too easy to be challenging, or else it is so difficult that he cannot comprehend and apply what is in it. So let us try to do a better job of fitting the health text to the high school student. Otherwise, he may be like Brer Rabbit, in the Uncle Remus story, who could read writin', but he could not read readin'.

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This paper was presented before the School Health Section of the American Public Health Association at the Eighty-Seventh Annual Meeting in Atlantic City, N. J., October 21, 1959.

The problems posed by addition of proteins and amino acids to foods is discussed in this article. The author points out the need for proper labeling of foods so as to give the consumer necessary and meaningful information.

PROTEIN AND AMINO ACID ADDITIONS TO FOODS

O. L. Kline, Ph.D.

WITH THE discovery of new facts and relationships one looks immediately to the application of the findings to the problems of human disease, or one proceeds to develop new hypotheses that are subject to further testing. The speculation indulged in during this process is properly a part of the scientific method, and such suggestions and proposals are discussed within, and for the benefit of, the scientific community. Thus it is unfortunate when speculation concerning the application of scientific findings, particularly in the field of public health, is prematurely presented to a lay public unequipped to understand the background or limitation of such projection. It is particularly unfortunate, and may result in serious consequences, when such speculation becomes a part of the labeling and advertising of our foods and drugs. It is with this in mind that we look at the protein problem.

Protein is a dietary constituent long known to be essential in nutrition. What has caused a renewal of interest and a renewed emphasis on protein needs among nutrition-conscious people? What is behind the recent propaganda of the need for increased protein in sickness and health, for the young and the aged, for pregnant and lactating women, and most particularly for those who would attempt to reduce their body weight?

Increased activity among protein chemists followed the development of more precise and more feasible methods for measuring the amino acid composition of proteins. Furthermore, studies of amino acid requirements rather than of protein as such have given us new information and a better understanding of protein quality and protein interrelationships as well as more precise data on over-all requirements. Extensive study of protein malnutrition in many parts of the world has added to the interest in this subject. It is not surprising, therefore, that speculation on the public health application of these findings in this country has provided a basis for popular articles in our magazines, and in newspaper and television advertising extolling the virtues of the newly discovered values. Through these media, the American public has become all too conscious of the words "protein," "high protein," and "high-quality protein"—words involving concepts and interrelationships of which the ordinary purchaser has little understanding.

A brief review of our knowledge of protein nutrition will serve to remind us of the complexities with which we are dealing. Most of our foods contain

protein in some amount, with animal sources generally regarded as superior in this respect. The principal function of protein in the body is to furnish amino acids in adequate amounts and in a proper balance for the manufacture of the many different body proteins needed for tissue growth and maintenance, for enzyme function, or for glandular secretions. The proteins of our foods contain 22 or more amino acids and the pattern of their appearance in a protein determines its characteristics. Proteins are digested in the gastrointestinal tract by a series of enzyme reactions, releasing the amino acids that are then absorbed into the bloodstream. The most useful protein from a nutritive standpoint, that is, the protein of highest quality or greatest biological value, is one supplying amino acids in proportions most closely simulating the patterns of the body proteins. Eight of the amino acids are regarded as "essential," since they cannot be formed from protein nitrogen in the metabolic processes. The remainder of the 22, termed dispensable, are transformed one to another to maintain a body pool capable of supplying the demands for tissue synthesis of proteins. Thus the biological value of a food protein depends largely upon its content and proportion of the essential amino acids.

The catabolism of protein is dynamic and continuous, with the end product excreted as urea. This waste is replaced by continuous synthesis. Although it has been estimated that the adult human being synthesizes as much as three grams of protein per kilogram of body weight each day, only 10 per cent of this amount is wasted, and protein replacement is accomplished with an intake of approximately one-third of a gram per kilogram of body weight per day of a high-quality protein. One may readily calculate, then, that an adult man of average weight (70 kilograms, or 154 pounds) may satisfy his total requirement with an intake each day of 22 grams of a complete protein. Few proteins, however, meet the specification "complete." The biological value of the protein of the ordinary dietary in this country is 75 to 80 per cent complete; therefore the protein requirement of the 70-kilogram man may be satisfied with the daily ingestion of approximately 30 grams of protein.

Our food proteins vary greatly in their nutritional usefulness or biological value. In general, the cereal proteins are of lower biological value owing principally to a lack of the essential amino-acid lysine. Proteins from animal sources are of excellent quality because of their well-balanced pattern of the essential amino acids. They also have a supplementary value in that they can make up the essential amino acid shortage of the cereal proteins, providing a mixture that is equal to the meat, milk, or egg protein itself. The striking exception, of course, is gelatin, which is devoid of the essential amino acid tryptophane. It is quite apparent, then, that a well-balanced diet, because of its supplementary values, will provide a protein mixture that has an amino acid pattern very close to that required by the body for complete utilization.

It has been said that protein malnutrition is the most important and widespread deficiency in the world today. This refers, obviously, to the world outside the boundaries of the United States. In this country the principal evidence of malnutrition is overweight, which affects more than a third of our population. Protein malnutrition has been studied as the cause of the disease kwashiorkor, primarily a disease of small children occurring in Central and South America, in much of Africa, and in India and the Far East. The availability of experimental amounts of pure amino acids, in conjunction with adequate supplies of specific proteins such as soy bean protein, casein, lactalbumin

and others, has provided a means of evaluating these substances in treatment of the disease. With more satisfactory knowledge of its cause, widespread malnutrition is being alleviated through the use of food combinations native to each country, combinations which provide a more adequate protein quality.

In Mexico and the Central American countries a mixture of seed meals such as corn meal, sorghum and cotton-seed meal, with small additions of dehydrated leaf meal and dried yeast, has been found as effective as animal protein in the treatment of severely affected children. This mixture is produced locally at a cost of two cents a day per child, in contrast to a cost of 20 cents for a quart of milk.

In the United States the picture is quite different. The Food and Nutrition Board of the National Research Council, in its table of Recommended Dietary Allowances, recommends a protein intake of one gram per kilogram of body weight, or 70 grams for the average man weighing 154 pounds. In a recent nationwide dietary survey, the Institute of Home Economics of the U. S. Department of Agriculture learned that household food supplies provide more than 100 grams of protein per person daily. Only 8 per cent of the family diets surveyed provided less than the NRC's recommended allowances, which are in liberal excess of the calculated minimum needs. In these low-income families a detailed study of the diets of a number of women showed a protein intake of 40 grams per day, which provided a liberal margin of safety for the essential amino acids. The margin was least for tryptophane but four times the requirement for lysine.

In light of these facts, we in the Food and Drug Administration have been concerned with the marked commercial trend which emphasizes the protein content and quality of a number of food products. Particular attempts are being made to improve the protein quality of cereal foods to make them the equivalent of milk, meat and eggs. Just as amino acids are widely used to supplement the cereal protein of animal feeds, lysine has appeared recently as an ingredient of some breakfast cereals. Special breads containing added milk proteins, wheat gluten, soy protein or lysine are commonly found on grocers' shelves. In the Food and Drug Administration laboratories a number of specialty breads were studied, each represented in one way or another as a superior source of protein. They were found to vary widely both in quantity and quality of protein. In some of these breads the increase in nitrogen content above that of ordinary white bread was insignificant. In one bread, having a doubled nitrogen content, the protein quality was lower than that of ordinary white bread. Some of the breads studied were significantly improved. The labels of these specialty breads gave no indication of the value of the protein supplementation.

Under the regulations of the Food, Drug, and Cosmetic Act that relate specifically to protein foods, the manufacturer is required to state on the label only the protein content of a food in terms of per cent. The consumer, subjected as he is to a barrage of advertising that emphasizes the importance of protein in his diet, is totally unable to evaluate from the required label information the nutritional contribution he may expect from the product he has been induced to buy. Here is an area in which the layman is particularly dependent upon the completeness of label information and upon the clarity of its presentation—if he is to understand the value to be derived from a product and if he is to make the intelligent choice that will fit his particular needs.

It is not difficult to believe that labeling and advertising of some of the special protein food products contain

implications that are likely to be misleading, if not actually untrue. Any suggestion that the diet of the average person in the United States does not provide adequate protein is in this category. A subtle implication inherent in the "protein bread" advertising is that enriched white bread is nutritionally inferior.

Congress recognized the necessity for completely informative labeling in the area of nutritional claims and included in the Food, Drug, and Cosmetic Act the provision that "a food shall be deemed to be misbranded if it purports to be, or is represented for special dietary uses, unless its label bears such information concerning its vitamin, mineral, and other dietary properties as the Secretary determines to be, and by regulations prescribes as, necessary in order fully to inform purchasers as to its value for such uses." This language leaves little room for speculation on the part of the regulatory official as to what is expected of him. He must determine, with the aid of the most competent available authority, exactly what information consumers should have readily available to them on the label in order to make possible an accurate evaluation of the nutritional benefit they may derive from the product, and he must draft regulations that will guide the manufacturer in the design of a label that will accomplish this purpose.

There are, at present, regulations prescribing that certain information be shown on the labeling of a food that is claimed to be a source of vitamins and minerals, but there are none that deal with the problems of labeling foods for which special dietary properties are claimed because they have been fortified with proteins or amino acids or both. Protein interrelationships make for a complexity not found with other nutrients. What kind of information will be meaningful to the purchaser?

In those food products that make no significant protein contribution it would seem that any reference to protein on the label constitutes a misleading implication of benefit to the purchaser.

For those products that significantly improve the dietary protein level, the enforcement official is faced with another dilemma. In a mixed diet of the kind generally consumed in the United States, the protein quality of any single food is influenced by the rest of the daily diet, and for practical purposes the protein quality of the entire meal is the only significant consideration. Shall he consider that label representations for protein need only refer to quantity and that statements about the protein quality of any individual product are meaningless? Or must he maintain that the dietary pattern of each individual is not necessarily reflected in the national or regional averages of food utilization shown by dietary surveys? If the latter is the case, truthful and informative labeling with respect to protein should indicate the nutritional contribution that may be expected from any given product when consumed alone.

It would seem that the consumer should have available information dealing with each possibility so that he can decide which fits his own personal situation. If he knows that he or his children eat a well-balanced variety of foods every day, then his major concern is with the quantity of protein supplied by the product, since the factor of protein quality becomes insignificant under conditions where supplementary effects are important, and there is no reason why he should pay a premium price for a product with an improved protein quality. However, if for some reason such as eating habits, child-feeding problems, food idiosyncrasies or other medical problem there is not the usual or desirable variety of food intake, then a product with increased protein quality as well as protein quantity may be desirable. It is the function of the

label to provide the consumer with enough information to make the intelligent choice.

It has been suggested that the following type of label statement would inform the purchaser as to the protein value of a product offered for its protein content:

> Eight ounces of this food contains 16 grams of protein which is fully utilized when [this product] is eaten as a part of a balanced diet containing meat, milk, and eggs. In the absence of other food proteins in the diet, eight ounces will supply four grams of usable protein. The daily allowance for protein is 70 grams for the average adult, etc.

Such a statement would inform the purchaser about the quality and quantity of the protein contained in the product and relate it to a desirable daily supply. It may be in the best interest of consumers generally to establish by regulation under Section 403(j) of the Food, Drug, and Cosmetic Act a requirement for informative labeling of this kind.

Too frequently we underestimate the importance of food labels as a medium of nutrition information to the general public. Informative labeling can be made a significant part of the program on nutrition education, in which the Food and Nutrition Section of the American Public Health Association has had an active part. Perhaps no other group is so well equipped by training and by vocation to keep up the guard against nutrition misinformation. Strong cooperation among all organizations concerned with public health protection and the public good is a continuing necessity to combat the fraud and quackery that serve only to undermine the public health.

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Vitamins and Poison

"Consider the metabolic quirk that makes a poison of folic acid. If a patient with pernicious anemia is given folic acid instead of vitamin B_{12}, his anemia is corrected, but the central nervous system changes continue to progress, in fact they may be accelerated. . . . It is easy to decide that the peevish old lady who complains of fatigue should be given a 'tonic' of some sort, perhaps vitamin pills. But wait a moment. Once in a while, the peevish old lady has pernicious anemia and because of the folic acid in her vitamin pills she may spend the rest of her life incontinent of urine and feces, fast in a wheelchair. . . . The problem is not a large one in terms of numbers but fortunately it is a problem that has a solution: *omit the folic acid from multivitamin preparation.*" (WILLIAM H. CROSBY: The Danger of Folic Acid in Multivitamin Preparations. *Military Medicine*, April, 1960.)

There is a real manpower crisis in the health professions in the United States. What this means for mental health and illness is shown in the paper presented by Dr. Albee. The reader will find a good deal to think about in what the author says and in what he does not discuss.

THE MANPOWER CRISIS IN MENTAL HEALTH

George W. Albee, Ph.D.

I HAVE HAD a discouraging feeling recently that the problem of mental disorder, estimated by the Joint Commission on Mental Illness and Health to be costing our nation some three billion dollars a year and an unmeasurable amount of suffering and heartache, had been returned once again to the familiar limbo where it is always sent with the excuse that there are social problems of higher priority. Yet the problems of mental disorder, and of our nation's growing inability to provide competent professional help for those members of our society suffering from mental disorder, simply refuse to disappear but, rather, show alarming signs of getting worse.

Actually, professional manpower needs in any field are largely a matter of balancing the aspirations of society against its ability and willingness to pay for the realization of these aspirations. We are in the embarrassing position of being in the midst of a mental health movement without having enough competent professional people to provide the services the movement requires and with little or no prospect that we will be able to train enough of them to narrow the gap between aspiration and need for the foreseeable future.

Elsewhere, I have dealt extensively with the indexes of manpower need in the mental health professions and of the poor prospects for achieving any improvement in the number of available professional personnel.[1] Here I will sketch a few of the most important indications of the shortage of professional personnel in the mental health fields. The most serious understaffing exists, of course, in public mental hospitals, where most of the seriously disturbed members of society are housed, often with only simple custodial care.

The American Psychiatric Association, after careful study, has made recommendations as to the minimum number of professional people necessary to provide adequate service to patients in mental institutions. These standards are not those necessary for the best care, but only for minimally adequate care.

Registered nurses are in shortest supply—there are less than one-fifth the number that would be required for adequate staffing of the mental hospitals. There is one nurse for every four beds in general hospitals and one for every 141 beds in psychiatric hospitals.

Approximately one-third the number of social workers needed are on the job. Recently revision of the standards for

social workers has been discussed in light of their demonstrated competence to provide services other than those for which they were originally responsible. This would simply serve to make the shortage of social workers in our mental hospitals even more serious.

Public mental hospitals have less than half the number of physicians that would be required for competent, humane care. An additional problem, which I have discussed at length elsewhere,[1] is the fact that a very large number of the physicians now employed in our public mental hospitals are foreign-trained and in many instances are therefore not fully prepared to offer the same kind of help as psychiatrists trained in this country.

Our mental hospitals have approximately two-thirds the number of psychologists demanded by the APA standards, although in this instance, again, consideration is being given to revision of standards in view of the demonstrated competence of psychologists in new service and research areas since the standards were originally formulated.

Let me hasten to say that our manpower need is not confined to public mental institutions. The needs in general hospitals and in mental health clinics are equally great. In the latter case, for example, I have shown that we would need 2,500 trained professionals immediately to bring all our states up to the very modest goal of one mental hygiene clinic for every 100,000 people. If we were to strive to achieve the goal of one clinic for every 25,000 people, a very modest aspiration in view of the demand, we see immediately the impossibility of solving the problem. To try to reach this goal by 1965 would require 25,000 additional professional people, half of them in psychiatric social work and the other half divided between psychiatry and clinical psychology. There is no chance that these will be found.

Space does not permit me to mention other areas of need for professional personnel beyond the simple enumeration of a few: 750,000 children with orthopedic handicaps, 3,000,000 citizens with serious physical disabilities, 500,000 blind or totally deaf citizens, and the growing incidence of crime and delinquency, particularly among our young people. All these problems have mental health components and research is badly needed for prevention and alleviation.

Although it is not possible here to discuss shortages of each of the mental health professions in detail, I shall comment briefly on manpower prospects in psychiatry since this field is of such vital importance to any planning about future mental health needs and resources. There has been a good deal of talk recently about a phenomenal increase in the number of residents in training in psychiatry. Let us look carefully at the situation to see whether there is cause for optimism. Last year, we are told, there were about 2,700 psychiatric residents in training centers across the country. This sounds like a very large number, especially when we discover that at the beginning of this decade, in 1950, there were only some 1,400 psychiatric residents in training. It seems that we have nearly doubled enrollment in residency programs. But at that time less than 10 per cent of these residents were graduates of foreign medical schools, while last year approximately 40 per cent of these physicians were trained abroad. More than 1,000 of the current psychiatric residents have received their medical training outside the United States. There is little or no increase in the number of residents from our own medical schools.

We are a long way from having enough psychiatrists and we are not training them in sufficient numbers, nor in places where they are badly needed. Two-thirds of all the physicians now in training programs in state mental hos-

pitals, for example, received their medical education abroad. In 11 states no one is being trained in psychiatry, and nine other states have less than ten physicians in psychiatric residency training. New England and the Middle Atlantic States have nearly half of all psychiatric residents in training, although these states include only about a quarter of our population. Some 22 states had no residents last year in their state hospital systems.

Despite the apparent increase in the number of psychiatric residents, less than 700 are reported to be in their third year of training. Using the formula I have developed in detail elsewhere, I would predict that fewer than 200 of these trained psychiatrists will be available for what we might call public psychiatry—that is to devote a major share of their time to nonprofit agencies and institutions. Equally gloomy figures could be cited for other mental health professions.

Why are we in this position? Why is the nation that controls half the world's wealth and has only 7 per cent of the world's population unable to provide essential services for her mentally disordered and emotionally disturbed citizens? Again, I suggest, it is a matter of public reluctance to give up one thing for another. There are many and complex reasons for this reluctance, of course.

Our country's population is growing more rapidly than is the output of our professional schools. With a growth of some 3,000,000 people a year the demand for professional services of all kinds, including mental health services, is outstripping available professional personnel. This is not a temporary situation. Population growth is directly related to the number of women of child-bearing age (18-34 years of age for 85 per cent of babies born). This means that we can make fairly accurate predictions about future population growth, at least over the next 20 years. At present there are nearly 20,000,000 young women in our population between the ages of 18 and 34. Ten years from now there will be an additional 3,000,000 young women in this age range and 20 years from now there will be 12,000,000 more of these young women. This means that our society's demand for professional services in mental health, as in other service fields, will continue to expand.

At least two resulting characteristics of our population also affect specific mental health manpower demands. With the relatively high birth rate there is a sharp increase in the need for professional people in such specialties as child psychiatry, pediatrics, school psychology, school social work, child guidance, recreation work, immunology, and so forth. At the same time, the lengthening life span of our population is resulting in an increase in the number of older persons requiring professional services. The mental health problems of the aged and the demand for trained personnel to meet these needs continues to expand.

In this context, it is important to emphasize a serious problem in the utilization of available personnel. Professional work with children and with the aged, as well as with chronic conditions at all ages, is apparently not attractive. Professional people in mental health, and in many other specialties, spend a disproportionate amount of their time with young and middle-aged adults. Professional people, being human, respond to the dominant values of our culture. There appears to be a relationship between the prestige of the professional person and the prestige of his client. As children and elderly persons tend to be less prestigeful, and tend to be cared for by public agencies, there is less status in working with these groups. This means that there is a greater manpower shortage in these

fields than in the area of service to well-to-do middle-aged neurotics.

I shall mention one other problem affecting the availability of mental health manpower. This is the tendency of professional people to gravitate toward and to remain in urbanized areas. I mentioned a moment ago the disproportionate number of psychiatrists in training in the northeastern part of our country. Professional service in mental health, as in many other fields, is not equally available to all of our citizens. In my report for the Joint Commission I emphasized the relationship between the urbanization of an area and the availability of mental health personnel. A good example here is the contrast between Connecticut and West Virginia. Both states have approximately the same land area and approximately the same population. But Connecticut has about eight and one-half times as many psychiatrists as West Virginia. While it is true that there are twice as many patients in mental hospitals in Connecticut, it hardly seems probable that the remaining citizens need this disproportionate amount of psychiatric attention. It is not urbanization, of course, that is responsible for the concentration, but rather such factors as the availability of education and training facilities, per-capita income, and sophistication and acceptance of the psychological approach to emotional disorders. Even within an urbanized region, professional services are not equally available, as the New Haven studies have shown so clearly.

The presence of a training center is important to a region in recruiting and retaining professional people. Because the fields with which we are concerned require many years of preparation, students in these disciplines tend to establish themselves in the area in which they receive their training. For example, there are four times as many psychiatric social workers in the states where there are social work schools with specialized training in psychiatric social work as there are in those states where no such training facilities exist. Another example: Some 90 per cent of the country's analysts are in the dozen states in which psychoanalytic institutes are located and there are only 10 per cent of the psychoanalysts in the 38 states without training institutes. There is one analyst for every 124,000 people in states with institutes, and one analyst for every 1,262,000 people in the states without institutes. While neither ratio seems to offer much cause for optimism so far as manpower needs are concerned, the difference between the ratios does bear out the point I wanted to make.

When are we going to begin to catch up with demand? I believe that if we make a genuine and widespread effort we may be able to hold our own but see little prospect that we will be able to catch up with the need. Our educational system is not prepared to make a massive effort, and things are likely to get worse.

With less than 10 per cent of new medical school graduates entering training in psychiatry, even a sizable increase in the output of our medical schools would have little effect on the number of psychiatrists trained. Graduate programs in psychology and in social work have been through several lean years as a result of the sharp decline in the number of college graduates during the first half of this decade. This means that while enrollments now promise to increase gradually, shortages of instructors and supervisors are widespread.

While nursing is making rapid progress in terms of the number of people trained, only a very small percentage of nurses decides on a career in psychiatric nursing, so that the improvement in the number of nurses in proportion to the population does not affect the mental health field. Short-

ages of clergymen (in most denominations), of occupational therapists, and of other highly trained personnel also exist.

I shall now turn to manpower problems throughout our educational system because here, I believe, we find the immediate cause of shortages in prospect in the professions. A few facts will give you a feeling for the dimensions of our educational crisis. Three years ago the Fund for the Advancement of Education reported that in order to maintain our present ratio of teachers to students in the elementary and secondary schools we would need to attract into the teaching profession half of the total of college graduates each year for ten years. We are far from attracting this large number of people into teaching, so that each year the shortage of qualified teachers increases.

Last year we trained 11,000 physical education teachers and 3,000 mathematics teachers. Our future supply of football coaches is assured. More physical education teachers were trained last year than the combined total for biology, mathematics, physics, chemistry, and foreign languages. This means that high school graduates arrive in college poorly prepared in the fields they would need to pursue to enter medicine, psychiatry, psychology, and the basic research disciplines on which most of our applied professional fields must be based.

At a time when we are faced with rapidly rising college enrollments, the loss of qualified faculty members at the colleges and universities continues. It has been estimated that between 300,000 and 400,000 faculty members must be found over the next 12 years to replace those who die, retire, or leave the field and to take care of increased enrollments. Currently fewer than 4,000 recipients of doctoral degrees enter academic teaching each year so that there are simply not going to be enough competent faculty people available to teach even those young people who are attracted to higher education. Current shortages of people for responsible teaching positions on the faculties of medical schools, graduate schools, and other professional schools are growing.

One other factor deserves mention. Only about one-third of the brightest 20 per cent of our young people now graduate from college. This means that we are losing two-thirds of all the brightest youngsters who are most able to profit from higher education and most likely to be attracted into the sciences and professions. Whenever I read about the doubling of our college populations over the next decade I realize what this means: Our higher educational institutions are going to be so overtaxed that little or nothing will be done to encourage all these bright young people with high ability, but with insufficient money or motivation, to go on for higher education. A complex civilization such as ours, with high aspirations for the health and welfare of its citizens, must depend on highly trained and educated manpower. Our educational system is not going to supply this manpower and things are going to get worse before they get better.

Are there, then, no hopeful aspects to the manpower picture? I cannot find very many. Theoretically, we could improve our utilization of available personnel by finding ways to attract competent people to geographic areas now understaffed. We might also find ways of attracting trained personnel to agencies and institutions where there is a more clear-cut need for their services.

We are not likely to shorten required training periods. Times of manpower shortage are times when training programs are lengthened rather than shortened. Times of shortage are times when professions make gains and consolidate their positions. This is partly a response

to the concern over the use of poorly trained personnel, although I am sure you will agree there are other reasons.

I want to emphasize problems of utilization once more before I close. I think most of us would agree that if we compared a list of priorities of need for professional services in mental health with a list of present professional activities, we would find many discrepancies. The outstanding example here would be the disproportionate amount of time spent with middle-aged neurotics as against the relatively little time spent on disturbed children and adolescents. We certainly know enough to be able to say with some confidence that it is both economically and morally sound to spend as much professional time as possible with children, where real progress can often be made and where future disorders can be prevented or alleviated. Yet the facts show that the greatest shortage of professional people is to be found in work with children.

Finally, I would emphasize that over the long range our only hope is for research breakthroughs into the causes and prevention of mental disorder. We are on an endless treadmill of numbers and need unless we find ways of reducing the number of people requiring mental health services by preventing these disorders before they appear. It may be that our only hope in this field is to concentrate our energies on the training of research personnel, even if this means a reduction in the number of practitioners we prepare and temporarily, therefore, a graver shortage in the clinical field.

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Dr. Albee is professor of psychology, Western Reserve University, Cleveland, Ohio.

This paper was presented before a Joint Session of the Medical Care and Mental Health Sections of the American Public Health Association at the Eighty-Seventh Annual Meeting in Atlantic City, N. J., October 21, 1959.

An example of association between hospitals in a metropolitan community and a home for the aged is presented in this article. The functions of the institutions are discussed, and the authors indicate some possible wider applications.

THE UTILIZATION OF GENERAL HOSPITALS BY THE POPULATION OF A MODERN HOME FOR THE AGED

Manuel Rodstein, M.D., and Frederic D. Zeman, M.D.

THE problem of the optimal relationship between the general hospital and the modern home for the aged is one which has been the subject of active discussion in recent years.[1,2] This has involved such topics as the proper division of functions, the desirability of geographical proximity, the unity or autonomy of the administrative and medical staffs, and the actual arrangements for interchange of patients. We do not believe that there is any one formula which is applicable to the entire country. The possible solutions depend upon the size of the community, the age distributions of its population, its financial resources, its geographical layout, and on its medical facilities, as well as on the integration of medical and welfare agencies.

Over the course of the past 80 years, The Home for Aged and Infirm Hebrews of New York has evolved a pattern of relationship with neighboring general hospitals, many of which are fellow members of The Federation of Jewish Philanthropies of New York. This has proved to be functionally efficient, economical, and in the best interest of the community, the general hospital, and the older men and women residing in the home.

The policy of The Home for Aged and Infirm Hebrews is to function as an intermediate medical facility serving areas of medical need not otherwise met by existing facilities. Our objective is to provide comprehensive care for our aged men and women in accordance with the highest standards of modern practice, without performing medical functions for which the general hospital is designed and equipped, such as operative surgery, surgical diagnostic procedures, roentgen therapy, and radioisotope diagnostic and therapeutic procedures.

The Home for Aged and Infirm Hebrews is an autonomous institution functioning under its own board of trustees, with administrative, medical, nursing, social service, and dietary staffs, and is approved by the Joint Commission on Accreditation as a hospital. The medical staff is made up of 40-odd physicians of excellent qualifications. The resident staff is composed of eight men and women. The home serves over 1,000 aged individuals whose function ranges from fully ambulatory to com-

Table 1—Transfers of Residents of The Home for Aged and Infirm Hebrews to General Hospital Wards for Temporary Care, 1956

Temporary general hospital transfers	89	Temporary transfers to home infirmary	292
Average stay days per patient	17	Average stay days per patient	27.4

pletely disabled, in two main centers (Central House and Kingsbridge House), in two apartment residences, and as members of an extramural care group in Manhattan and the Bronx. None of these locations is more than two miles from the four general hospitals with which relations are maintained for ward and outpatient clinic care. These hospitals are Mount Sinai in Manhattan, and Lebanon, Bronx, and Montefiore in the Bronx.

We have a special arrangement with a private ambulance service for effecting transfers to and from general hospitals. Our relationships with hospitals are facilitated by the knowledge of the general hospital staffs that the patient's bed is always saved for him and that retransfer is effected promptly on request. Furthermore, the residency training programs of the hospitals are greatly helped by the steady flow of clinical material that might otherwise be unavailable, especially in the fields of orthopedic and ophthalmic surgery. Decision to seek general hospital transfer is on advice of our attending staff and is arranged through conference by our chief resident physician with the admitting physician of the hospital.

In order to illustrate the nature of our relationship to these general hospitals, the following survey was made of transfers to them for ward care, and of usage of their outpatient clinics by our charges in the year 1956.

As Table 1 clearly indicates, a total of 89 temporary transfers were made to general hospitals with an average length of hospital stay of 17 days. This number may be compared to a total number of 292 patients given temporary care in the home infirmary areas with an average stay of 27.4 days during the same period.

Of these 89 cases, 60 were transferred to Mount Sinai Hospital, 15 to Bronx Hospital, 6 to Lebanon, 3 to Montefiore, and the remaining 5 to other hospitals. These last 5 cases occurred in special circumstances such as well established old contacts prior to admission to the home, and as the result of street accidents. In addition to the 89 temporary admissions to general hospitals, there were two permanent transfers to Bellevue Hospital for severe psychiatric deterioration.

The reasons for transfer can best be detailed through a breakdown of the total into the number transferred to particular services. Twenty-two cases were sent to ophthalmologic services, primarily for the surgical removal of cataracts. They received their aftercare at the home and received general supervision while at the general hospital by members of our own ophthalmology staff. In fact, our staff men through their general hospital appointments performed many of the operations themselves.

Eighteen cases went to general surgical services for such procedures as appendectomies, removal of the gallbladder, care of bleeding stomach ulcers, repair of hernias, operations for various types of cancer and for intestinal obstructions. In many cases our own consultants performed or supervised the operations and we gave aftercare in our infirmaries.

Fifteen cases went to urological services primarily for operation on benign prostatic enlargement or cancer of the bladder, or for diagnostic and therapeutic cystoscopies. We performed the neces-

sary prior x-ray and urine studies and again our staff of urologists often operated on the patients or supervised their care. We provided much of the postoperative care at the home. Thirteen cases went to orthopedic services for care of fractures, particularly of the hip. Our staff of orthopedic specialists often were involved in their care at the general hospital but the rehabilitation process was carried on at the home, making possible early transfer back to our own infirmaries. Ten cases went to medical services primarily for specialized diagnostic and therapeutic services which we do not provide, such as radiotherapy for cancer and the use of radioisotopes in thyroid disease and cancer. Two cases went to Mount Sinai Hospital for electric shock therapy for mental disturbance, with good results. We provided the necessary prior general check-up and aftercare. Close continuity of care of patients of the home undergoing such temporary care in general hospitals is insured by a number of means. The resident physician at the home discusses the patient with the admitting physician of the general hospital prior to transfer. A detailed abstract together with x-ray films accompanies the patient for the information of the admitting physician and the hospital staff. Ward visits are made by members of our attending and social service staffs. When discharge is imminent, the resident physician of the general hospital calls the home in advance and information is communicated to our resident physicians regarding current status, medications, and recommendations for further care. Similar contacts are made between the social workers. We obtain a complete abstract from the general hospital of each such admission, which becomes part of the patient's medical record at the home. These procedures have operated smoothly in attaining the objective of coordinated continuous care.

We feel that these data indicate that while we are providing the great bulk of care of the chronic illnesses and of their acute exacerbations at the home itself, we are not at the same time attempting to care for conditions which demand special staff and equipment with which the general hospial is already provided. For the Jewish community of the area, this provides efficient and economical care without unnecessary duplication of facilities. By our method of reserving the bed of the elderly invalid, transferred temporarily to the general hospital, we present the hospitals with no difficulty in disposition of our cases. Through our own trained staff and our infirmary, laboratory, and rehabilitation facilities, we can provide for efficient care before and after transfer. In addition to the factor of improved care, the saving in community funds is considerable. No recourse to higher mathematics is needed to calculate the difference between $14 per day per person for infirmary care at The Home for Aged and approximately $28 per day per person in a general hospital.

The patients in our own infirmaries are provided with excellent total care through our specially trained and oriented staff with broad experience and interest in the aged. Over 80 per cent of our attending staff are diplomates of the various specialty boards. Our patients treated at the home remain in a friendly and familiar environment, to which the nursing and social service staffs make an invaluable contribution.

Usage of General Hospital Outpatient Clinics by the Home Population in 1956

A study of the use of general hospital outpatient departments shows that in 1956, 73 individual ambulatory residents of the home made a total of 290 visits to various clinics at Mount Sinai, Bronx, Lebanon, and Montefiore Hospitals.

These figures may be compared to the use of our own clinics at the home itself and in our consultants' offices by our patients in the same period of time. A total of 19,311 such visits were made by our almost 1,000 residents. This shows that only a small percentage of our total clinic load had to go outside of our own facilities for care.

A résumé of the type of special clinics utilized at general hospitals in their outpatient departments and the reasons they were used reveal the following information. Radiotherapy clinics were used for x-ray treatment of cancers and certain skin conditions. Thyroid clinics were used for diagnosis and treatment with radioisotopes. We sent patients to various surgical, urological, and orthopedic follow-up clinics in order that the surgeons at the general hospitals could determine the results obtained by previous surgery at their institution and ascertain any need for further procedures. Cystoscopic examinations were frequently carried out on an outpatient basis since we have never felt justified in duplicating the needed expensive equipment and personnel. A few went for special consultation or diagnostic tests to breast, endocrine, tumor, and hematology clinics. Continuity of care is effectuated by exchange of abstracts and telephonic communication between physicians.

These figures show that we are providing the overwhelming majority of services for our own ambulatory patients. In certain fields which cover the greatest areas of medical need, we provide complete or almost complete care, i.e., general medical, heart disease, diabetes, arthritis, dermatology, hematology, psychiatry and neurology, dentistry, ophthalmology, gynecology, rehabilitation and physical medicine, podiatry, and so forth. In general, we use the general hospital outpatient clinics only for specialized services requiring unusual and costly equipment, or where consultations are needed with specialists in certain restricted fields. Review of similar figures for 1957 and several years preceding 1956 revealed no essential differences from those for 1956.

Conclusions

This study indicates that the interrelationships of our institution and the general hospitals are functioning in a mutually satisfactory manner. The best interests of the residents of the Home for Aged and Infirm Hebrews, of the general hospitals, and of the community are being served. Among other lessons to be drawn from our experience is that this type of relationship has obviated in this setting the necessity for proximity of the home for the aged to the general hospital, has reduced the expenditure of community funds for unnecessary hospital stays, and serves to maintain high standards of medical care in the home for the aged.

This study further emphasizes a basic difference in function between two types of institutions. The general hospital is by its policies and organization devoted to the care of episodes in the lives of human beings, whereas the modern home for the aged is concerned with all aspects of the terminal years of life. By close coordination, a total effect is achieved which brings rich results for the patients as well as for the education of physicians, nurses, and social workers.

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Drs. Rodstein and Zeman are associated with The Home for Aged and Infirm Hebrews of New York, New York City.

A study of the patterns of behavior of OPD patients of the Beth Israel Hospital in Boston in obtaining medical care revealed a number of different patterns. These patterns are examined as to the medical care resources involved and their differential use. As a result, the authors point to important implications for the provision of care on an ambulatory basis in a community.

PATTERNS OF MEDICAL CARE: A HOSPITAL'S OUTPATIENTS

Jerry A. Solon, M.A., F.A.P.H.A.; Cecil G. Sheps, M.D., M.P.H., F.A.P.H.A.; and Sidney S. Lee, M.D., Dr.P.H., F.A.P.H.A.

The Conceptual Framework

A PRECEDING PAPER[1] presented a conceptual framework for delineating how people obtain their medical care. The present report demonstrates the application of this conceptual framework to the outpatients of a general hospital. The essence of the conceptual framework is that a person's use of a particular medical resource—be it private practitioner, outpatient clinic, or other source of medical services—takes on greater meaning when examined from the perspective of the whole range of medical care resources which he uses. This integrating view entails more than mere enumeration of an individual's sources of care: It calls for an understanding of the interrelationships of the various sources and components of care.

Several analytic concepts contained within the conceptual framework have been formulated to assist in identifying and interpreting a person's pattern of medical care:

1. Criteria were established to identify the sources constituting an individual's "current pattern" of obtaining medical care. A person's current pattern, using these criteria, is represented by the sources of medical services obtained during the past year, plus sources which he is likely to use under specified conditions.
2. The concept of a "central source" of care within the individual's pattern was developed. A source is defined as "central" by virtue of certain qualitative attributes rather than by volume of use.
3. Alternative roles of people's central sources of care were outlined in terms of the medical component (general medical vs. specialty care) which the central source represents in the individual's care.
4. The concept of a "configuration" of a person's medical care pattern, to be derived from the underlying detail, was propounded. The "configuration" distills, from the complete range of the individual's sources, those which constitute the continuing, significant elements of his pattern of care.

Purpose and Method

The immediate concern of this study at Beth Israel Hospital in Boston was to reexamine the role of the outpatient department in the medical care received by its patients, not as that role might be theoretically conceived but as it actually functions.

A sample of the hospital's outpatients was interviewed during approximately a three-month period in 1958 (March-May). The sample, stratified by clinics, comprised 667 patients: This number represents 15 per cent of an estimated total of 4,500 patients seen in the outpatient department (OPD) during the three-month period. The technics employed to construct a random stratified sample of the total OPD population, which was designed to avoid the bias of weighting the sample by the varying frequency of individuals' visits, will be described in a forthcoming report.

Interviews were successfully completed with 97 per cent of the total selected for the sample. The validity of the information obtained has been generally supported by a special test devised for the purpose.[2]

The Setting

Beth Israel Hospital is a voluntary, general, teaching hospital in a large metropolitan center. Its outpatient department includes 32 clinics, to which about 60,000 visits are made annually.

People may come to the OPD either on their own initiative or through referral by a physician or some other resource. Patients must be judged medically indigent to be admitted. The admitting procedure takes into account the person's family and economic situation, together with his medical condition. Eligibility is determined on a flexible judgmental basis rather than by a fixed income scale. For those admitted to the OPD but who are unable to pay the standard fees for clinic visits and ancillary services, the charges are reduced or set aside.

The clinics are staffed mainly by visiting physicians who are in private practice. Their service is contributed without charge, but they receive and exercise the privileges attendant on hospital affiliation—admission of their private patients to the inpatient service and use of other hospital facilities, as well as educational opportunities and professional status. In addition, the OPD staff includes some full-time physicians and a corps of house officers supplemented by nurses, nutritionists, physical therapists, social workers, and other professional and clerical personnel.

Findings

Our analysis of the results of the study is presented within the conceptual framework outlined in the foregoing.

I. Patients' Current Sources of Medical Care

Using the criteria discussed in the introductory paper,[1] we have identified for each patient the resources which could be regarded as components of his current pattern of medical care. At the simplest level of analysis, this permits us to observe how many of the outpatients of the hospital use various other resources (Table 1).

Other Clinic Resources

Of the people using the hospital's outpatient department 13 per cent also use another OPD. Of these, two out of three used another OPD during the year preceding the interview. Nonhospital clinics are used by 11 per cent of the patients; these include clinics operated by health departments, schools, industrial firms, unions, and nonhospital institutions. Three out of four of these patients visited such clinics during the year preceding interview.

Private Physicians in Home and Office

A majority of the patients (57 per cent) make office calls to private physicians at some time. Three of every four such patients made calls within a year's time preceding the interview. Figure 1 shows to what extent the use of private

physicians for ambulatory care is for general or specialty medical care. One-half of the outpatients use private doctors for general medical care, while 22 per cent use them for varied specialist care. There is some overlapping here, since 15 per cent of the total report use of private physicians for both general and specialty care. (The distinction between general medical and specialty uses will be particularly significant as we proceed to a broader perspective of the patients' patterns of care later in this analysis.)

Over half the patients (58 per cent) sometimes call a private doctor to the house. Somewhat more than half of these had a home call during the past year. Those patients who use private physicians for both home and office calls constitute 40 per cent of all the OPD's patients.

Emergency Resources

In emergencies, three-fifths of the patients come or are brought to the hospital's emergency unit (about half of these used this unit during the past year). However, at times some of these patients, as well as others who do not use the emergency unit at all, turn to the emergency units of other hospitals or to a private doctor. In all, 44 per cent of the outpatients use a private doctor (at least as one among other resources) under emergency conditions.

Inpatient Resources

Beth Israel Hospital is the primary resource for hospitalization of its outpatients. More than four-fifths of outpatients are in this group; some of these, however (less than one-tenth of the total), are hospitalized elsewhere at times, depending upon the purpose of the hospitalization, the attending physician's affiliation, and other circumstances. Eight per cent of the outpatients use only other hospitals and do not use Beth Israel for inpatient care. (Information on this score is unknown for one-tenth of the sample.)

As expected, most of the outpatients, if admitted for inpatient care, go on the house (ward) service. However, a minority (13 per cent) sometimes or always use a private physician (on private or semiprivate service) when hospitalized.

About one-fourth of the outpatients had been hospitalized within the preceding year.

Table 1—Other Sources of Medical Care Used by Outpatients of Beth Israel Hospital, Boston, Mass.

Additional Sources of Medical Care	Patients*	
	Number	Per cent
Ambulatory nonemergency care		
Other OPDs	87	13.0
Nonhospital clinics	73	10.9
Private physicians (office calls)	380	57.0
Any one or combination of these	434	65.1
None of these	210	31.5
Nonambulatory or emergency use of private physicians		
Home calls	384	57.6
Emergency care	295	44.2
Inpatient care	87	13.0
Any one or combination of these	473	70.9
None of these	171	25.6
Hospitalization		
At Beth Israel Hospital only	472	70.8
At Beth Israel and other hospital(s)	70	10.5
At other hospital(s) only	52	7.8
Choice not indicated	50	7.5
Unknown as to sources of care	23	3.4

* Total number of outpatients in sample (667) equals 100 per cent.

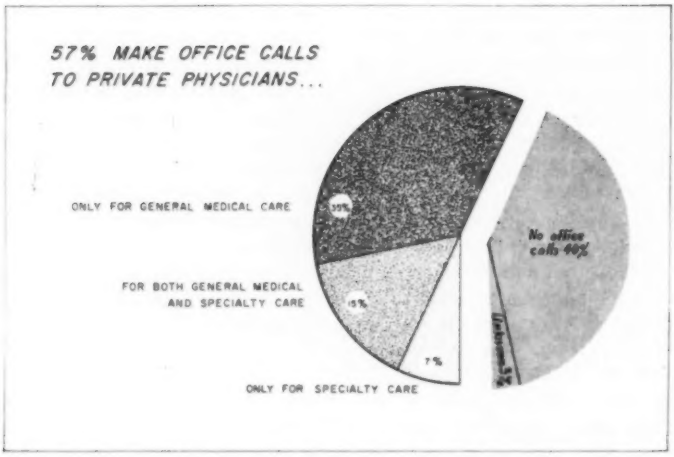

Figure 1—General Purpose of Office Calls to Private Physicians by Outpatients of Beth Israel Hospital, Boston, Mass.

2. Central Source of Medical Care

A magnet introduced into a haphazard field of iron filings produces a patterned arrangement. Similarly, viewing an individual's multiple sources of medical care from the standpoint of his "central source" reveals direction and coherence in his pattern of obtaining medical services. Some of the data given here, for example, may set us to wonder about the clinic patients' use of private physicians and of other clinics and hospitals in relation to their use of Beth Israel's outpatient department. The information shown in Figure 2 on outpatients' central sources of care begins to shed light on the over-all patterns of use revealed by patients.

Beth Israel Hospital's OPD is, for one-half of all the people who use it, their central source of medical care. Very few structure their care around another hospital or clinic. One-fourth, however, use a private physician as their central source. In contrast, one-sixth of the OPD users follow a relatively unstructured pattern of obtaining medical services, having no particular central source.

3. Role of Central Source of Care

Although the "central source" has the common function of centrality in the patterns of care of different persons, it may nevertheless have varying medical content in the patterns of different individuals. Basically, our classification for this aspect of the central sources hinges on the distinction between "general medical" and "specialty" care.

For the purpose of this study, the analysis of differential central sources of care treats "private physicians" as a single entity within the patient's pattern of obtaining care and does not distinguish each physician in the patient's pattern if there is more than one. Thus, the patient who uses a single private physician as his central source and other private physicians in addition, will be classified hereafter according to the composite role of the several private physicians.

As the first pair of columns of Table 2 shows, the central source of one-half of the patients serves them as a source of both general medical and specialty care. For one-sixth of the patients, the

central source provides general medical care only. For a small number, a specialty resource is the central source.

The role of our hospital's OPD for those patients who use it as their central source of care may be distinguished through a comparison with those patients whose central source is among private physicians (see last two pairs of columns, Table 2). Among the OPD central source group, nearly nine-tenths obtain both general medical and specialty care from the variety of clinics constituting the OPD. Among the group for whom a private physician is central, only four-tenths obtain both general medical and specialty care from private physicians, while a majority of this group confine their use of private physicians to general medical care.

4. Configuration of Medical Care Pattern

Just as the focus on central source clarifies the person's pattern of medical care, so, also, we need some clarification of the rest of the pattern. We gain this clarification in our analysis by trimming away the "fringes" of the person's practices in obtaining medical services. Relatively inconsequential sources of care and fortuitous or passing incidents of use recede in this view, bringing the significant core of the patient's current pattern into relief.

We have classified the configurations which emerge from this process, identifying the essential components of the individual's general medical and specialty sources of care in terms which are relevant to an analysis of the OPD. In Figure 3, we see the relative parts played by OPDs and private physicians in outpatients' patterns of obtaining general medical and specialty care. While the outpatient department predominates for this group in both types of care, the role of the private physicians is distinctly more prominent in the general medical care of these patients than in their specialty care. One-fourth of the people who use the OPD obtain their general medical care wholly from private physicians.

We come now to a comprehensive

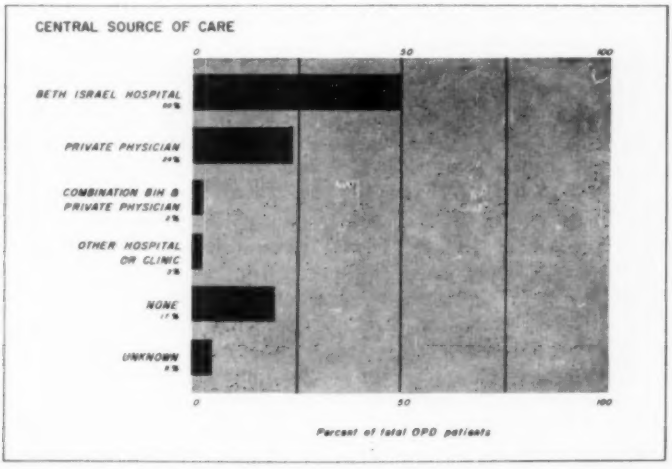

Figure 2—Central Source of Medical Care of Outpatients of Beth Israel Hospital, Boston, Mass.

Table 2—Role of the Central Source of Medical Care of Outpatients of Beth Israel Hospital, Boston, Mass.

Role of Central Source in Patient's Care	Total Sample of Outpatients, All Central Sources		Comparison between Two Major Central Sources			
			Beth Israel Hospital		Private Physicians*	
	Number	Per cent	Number	Per cent	Number	Per cent
Total	667	100.0	333	100.0	160	100.0
General medical care only	111	16.6	12	3.6	93	58.1
Specialty medical care only	26	3.9	23	6.9	0	0
General and specialty medical care	366	54.9	295	88.6	64	40.0
Split central source	13	1.9	—	—	—	—
Guidance without direct treatment	2	0.3	0	0	2	1.2
No central source	114	17.1	—	—	—	—
Unknown	35	5.2	3	0.9	1	0.6

* Represents the combined role of all private physicians in the care of the patient for whom a private physician is the central source.

view of the patients' patterns. Table 3 interrelates the patterns of obtaining general medical and specialty care. We see now that the OPD represents essentially the complete source of both general medical and specialty care for one-third of its patients. This is by far the largest single group characterized by a distinctive configuration of care.

The remaining two-thirds of the patients display a wide variety of configurations. No one of these constitutes a very large group, but the more frequent groups are as follows: General medical care is shared between OPDs and private physicians, with specialty care obtained from OPDs (13 per cent). General medical care is obtained from private physicians and specialty care from OPDs (10 per cent). General medical care is received from private physicians and specialty care is shared between private physicians and OPDs (7 per cent). Both general medical and specialty care are shared between OPDs and private physicians (6 per cent).

For a small number, indeed, the use of the OPD itself is insignificant in terms of the patient's continuing pattern of medical care (2 per cent obtain essentially all their care from private physicians).

Discussion

The findings of this study help us to delineate the role of the outpatient department. The data presented above and the analytic perspectives which have been described sharpen our view of the OPD as it actually functions in diverse ways. We see the hospital's outpatient department, not as an entity by itself, but in relation to its patients' other sources of care; not as a uniform segment in the medical care of all its patients, but as a varying component fitting into many different patterns of medical services; not necessarily as the central resource in the patients' medical management, but rather as a resource having multiple roles among the patients it serves.

The many distinctive mosaics formed by the patients' methods of obtaining medical care suggest that what is needed is responsiveness by the OPD to the individual's over-all pattern of care. A particular type of role and responsibility is called for with patients to whom the OPD is the sole resource, and a very different type of role and responsibility for patients whose care is centralized elsewhere but for whom the OPD has some special, limited function to perform. To identify different types of users—as this study does—is to suggest discriminating assumptions of responsibility by the outpatient department for different types of users. Differentiation in this regard serves the patient, the hospital, and the patient's other sources of care.

Whatever the kind and extent of the responsibilities undertaken to fit the patient's total pattern of care, one responsibility should remain common to the full gamut of roles: that of coordinating the elements in the patient's care. In the case of the one patient in three whose total care is encompassed essentially in the outpatient department, this means coordination within the OPD, and between the OPD and the hospital's other facilities. In the case of the other two-thirds, with their variously constituted patterns of obtaining care, it means coordinating the OPD's services to the patient with the other resources which the patient uses.

Differentiating the OPD's responsibilities for the care of its patients has corresponding implications for the organization and administration of the services of the OPD. Particular types of organizational and administrative arrangements might be best suited for the provision of services to one or another kind of patient group. The relative importance of groups with different utilization patterns in the composition of the OPD population might suggest development of service arrange-

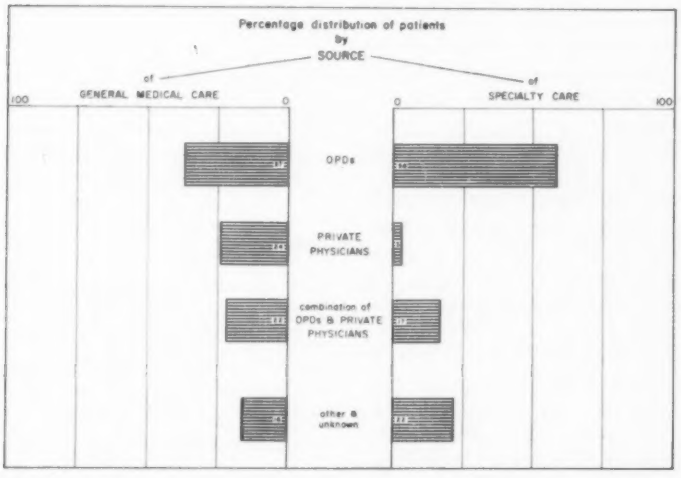

Figure 3—Sources of General Medical and Specialty Care in Configurations of Outpatients' Patterns of Medical Care, Beth Israel Hospital, Boston, Mass.

Table 3—Configurations of Outpatients' Patterns of Medical Care, Beth Israel Hospital, Boston, Mass.

Source of General Medical Care	Total Sample of Outpatients		Outpatients Receiving Specialty Medical Care Essentially from—							
			OPDs		Private Physicians		Both OPDs and Private Physicians		Other and Unknown	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Total	667	100.0	389	58.3	17	2.5	116	17.4	145	21.7
OPDs	249	37.3	220	33.0	1	0.1	19	2.8	9	1.3
Private physicians	162	24.3	64	9.6	13	1.9	48	7.2	37	5.5
Both OPDs and private physicians	146	21.9	88	13.2	2	0.3	38	5.7	18	2.7
Other and unknown	110	16.5	17	2.5	1	0.1	11	1.6	81	12.1

ments particularly geared to the functions served by the OPD for the specific groups.

Interpretations of the patients' use of different resources need to be discriminating, too. For example, our finding that 13 per cent of the hospital's outpatients use other OPDs cannot lead to any single conclusion. It does not, for example, follow that this represents a practice of "shopping around" for care. Some of it, indeed, is just that. But some of this behavior, far from being a duplication is complementary in a most rational way. Some of it is definitely planned by the OPD itself, as in its referral of a patient to another OPD for a specialized service uniquely available there.

Similarly, the finding that various nonhospital clinics are used by 11 per cent of the outpatients stems in part, from the following rational practices: employees' use of a clinic provided at their place of work; use by students of their school health service; use of public health clinics, and so on.

We have found that in one fashion or another, 79 per cent of the outpatients use a private physician—some regularly, some sporadically, some very rarely; some for office calls, some for home calls, some for emergencies, some for inpatient care, some for various combinations of these. What does this mean? It means different things in different cases—from anomalies between clinic and private-doctor use, to logical complementing arrangements (for example, the OPD does not make home calls). Later analysis of our data will reveal the outpatients' patterns of medical care in further detail, so that we may better interpret the implications of the different patterns.

The analytic point of view adopted in this study is not to be taken to mean that the OPD should merely accommodate itself to the patients' patterns of obtaining medical care, whatever they may be. We need to move beyond understanding to evaluation, and beyond evaluation to change, if changes are indicated. But we can move toward whatever goals we set only by knowing first where we are.

Summary

A study of the outpatient department at Beth Israel Hospital in Boston has revealed the major outlines of the patterns of behavior of OPD patients in obtaining medical care and the role of the OPD in these patterns. Highlights among the findings may be noted:

1. Many different ways of obtaining medical care are represented among the users of the OPD. Their patterns of care vary from highly centralized, structured arrange-

ments to very diffuse distribution of their sources of services.

2. The OPD serves a variety of functions, as different people use it in various combinations with other sources of medical care.
3. One-half of the outpatients use Beth Israel Hospital as their central source of care; one-fourth have a private physician as their central source; one-sixth follow an unstructured course in seeking medical care, with no central source.
4. Eliminating from consideration negligible or transient instances of the use of medical resources, one finds that
   a. One-third of all outpatients obtain essentially all their care—both general medical and specialist care—from the OPD.
   b. Other distinct, though smaller, groups are identified whose care is shared in a variety of ways by the OPD and other sources outside the hospital.
5. Taking into account all instances of use of medical resources, one finds that
   a. Two-thirds of the outpatients use some other resource (or resources) besides Beth Israel Hospital in obtaining care on an ambulatory basis.
   b. Most prominent among other resources for ambulatory care are private physicians, with other OPDs and clinics playing lesser roles.
   c. Most of the outpatients have recourse at some time to private physicians for some nonambulatory or emergency care.

The variety of patterns by which patients obtain their medical care imposes on the outpatient department the need for differentiating among patients who present themselves to it. The type and extent of responsibility which the OPD takes should be assumed with an eye to the individual's total pattern of care.

The organization of the OPD in rendering service should be geared to the functions it is to perform. Recognition of the types of responsibilities which the OPD is called upon to assume and which it is prepared to undertake, and identification of the case loads represented by different categories, should make possible a corresponding organization of the OPD's services. Effective discharge of its responsibilities for total or near-total care of some patients may require a distinctive organizational pattern quite different from that needed for patients whose major management is lodged elsewhere and for whom the OPD provides only a particular segment of care.

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An epidemiologic analysis of reports to the National Clearinghouse for Poison Control Centers reveals a number of interesting and practical points. Some of these indicate possible further studies, others point to avenues of prevention and control.

EPIDEMIOLOGIC ASPECTS OF POISONING ACCIDENTS

Howard M. Cann, M.D.; Albert P. Iskrant, M.A., F.A.P.H.A.; and Dorothy S. Neyman

In 1949 Gordon pointed out that there existed an epidemiology of accidents.[1] He noted that accidents conform to the same biologic laws as disease processes. Accident distributions show variations according to season, age, sex, and other factors as well. McFarland[2] likewise asserted that the epidemiologic approach is applicable to the study of accidents. He, like Gordon, pointed out that the host, his environment, and the agent must be studied not only individually but also as a complex interacting system in order to develop effective measures for accident prevention. Epidemiologic principles have been applied in studying childhood lead poisoning[3,4] and to the problem of accidental poisoning in childhood.[5-7]

Since it was first organized in the U. S. Public Health Service in 1957, the National Clearinghouse for Poison Control Centers has been conducting an ongoing epidemiologic study of poisoning accidents.[8] A reporting system, by which certain poison control centers submit to the National Clearinghouse reports of all poisoning accidents coming to their attention, has been functioning since 1957. The information contained in these reports forms the basis for this study.

Definitions

As used in this study, the terms "poisoning accident" and "accidental ingestion" refer to the ingestion of a substance without knowledge of the potential consequences. The terms "poison" and "poisonous substance" refer to any inedible substance which when taken into the body (by any route—ingestion, inhalation, or skin absorption)—in relatively small amounts, can cause illness and possibly death. The terms "potential poison" and "potentially poisonous substance" refer to any substance which when taken into the body in a large enough quantity can cause illness and possibly death. Strychnine, arsenic, mercury bichloride, and cyanide are examples of poisons. Aspirin, digitalis, antihistamines, and barbiturates are examples of potential poisons.

Methods of Data Collection and Material Studied

A standard report form is used to report cases treated by the reporting poison control centers and telephone inquiries made to these centers by physicians and nonmedical persons (usually parents) for information regarding

toxicity or treatment for the ingestion of specific substances. The form was designed to provide the following information: description and amount of substance ingested; clinical and laboratory findings; treatment given or recommended; length of hospitalization; and identifying data about the victim (name, age, and sex). In some cases further information concerning storage of the poison or potential poison, supervision of the victim at the time of the accident, and other circumstances surrounding the accident was obtained from a home visit, usually by a public health nurse.

A total of 15,094 individual case reports have been submitted by 59 poison control centers located in 20 states in various areas of the United States. These cases occurred at various times from January 1, 1954 to December 31, 1958. Of these cases, 14,069, or 93 per cent were classified as poisoning accidents and supplied the data for this study.

Results

Some Host Characteristics and Host-Agent Interrelationships

Approximately 90 per cent of poisoning accidents involved children under the age of five years. Because of this, all further data and discussion will pertain to this age group, except where otherwise indicated.

Many reports listed the age of the victim in years, not months. The age distribution of a group of selected cases recorded in months (or by birthdate) was determined (Figure 1). The six-month age period in which poisoning accidents occurred most frequently was that from 18 to 24 months. Almost one-fourth of accidents occurred in this six-month period and approximately three-fourths involved children between the ages of 12 and 36 months.

The age distribution of children ingesting various substances is shown in Figure 2. Two-year-old children ingested medications more frequently than children in the other four age groups; 39 per cent of all external medication and 46 per cent of all internal medication ingestions involved two-year-olds. External medications were ingested almost as frequently by children aged one year (36 per cent). Three-year-old children were next to two-year-olds in frequency of ingesting internal medications (26 per cent). Household cleaning and polishing agents, pesticides, petroleum distillate products, and paints and paint solvents were ingested more frequently by one-year-old children. All these products were ingested next most frequently by children aged two and then by children aged three years.

When children under five years were studied to determine the frequency with which different substances were ingested within each age group (Figure 3), the following patterns were noted: Internal medications made up a greater proportion of substances ingested by three- and four-year-old children than for other age groups. This proportion increased with age (17 per cent for children under one year of age, 23 per cent for children aged one year, 48 per cent for those aged two, and 60 per cent and 59 per

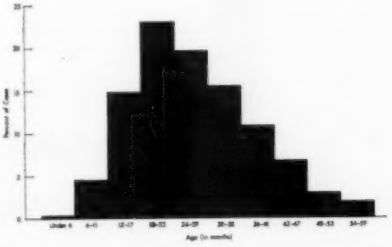

Figure 1—Reported Age of Children under Five Years of Age Treated for Accidental Ingestions, 1957-1958 (1,055 Consecutive Cases Submitted by Representative Poison Control Centers)

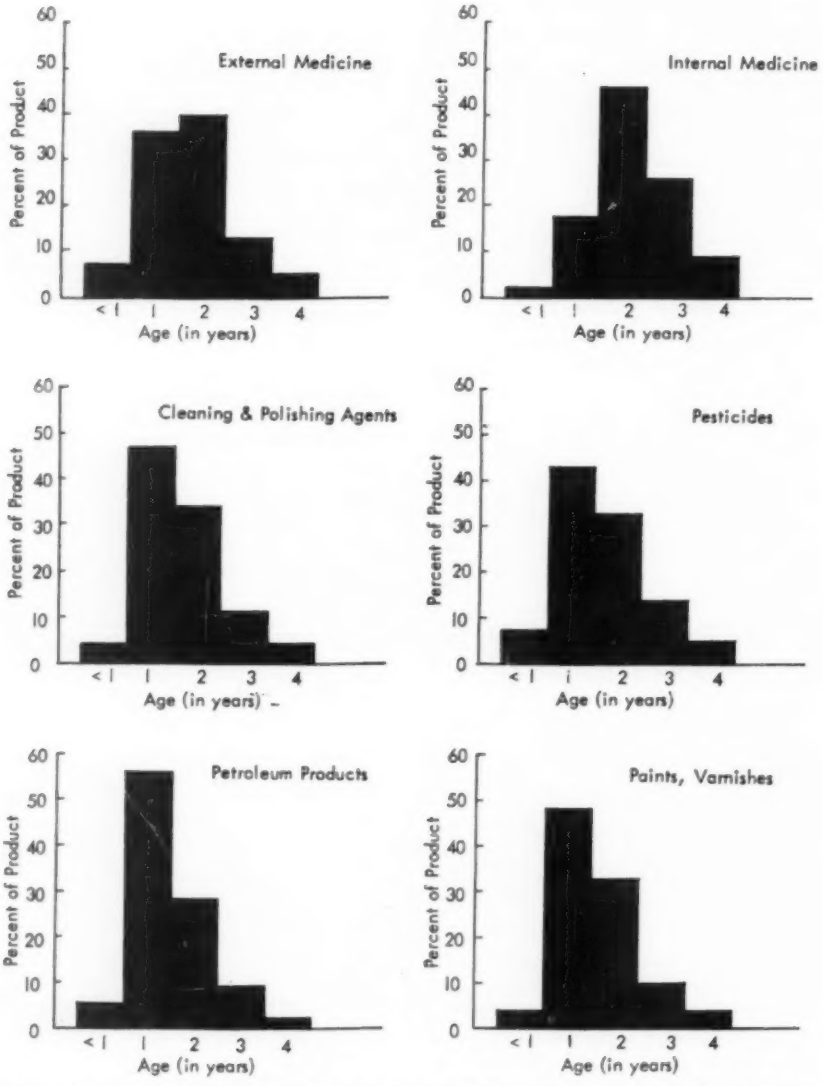

Figure 2—Specific Type of Product, by Age of Patient, Involved in Accidental Ingestions among Children under Five Years of Age, 1954-1958 (Individual Poisoning Reports by 59 Poison Control Centers)

cent for three- and four-year-old children).

A reverse pattern was noted for external medications and pesticides. The proportions of accidents involving external medications and pesticides were highest in children under one year and decreased with age: For external medications the percentages were 12 per cent for children under one year, 7 per cent for one-year-old children, 6.5 per cent for two-year-old, and 5 per cent for three- and four-year-old children; for pesticides the percentages were 16 per cent, 13 per cent, 8 per cent, 8 per cent, and 8 per cent, respectively. A decrease in the proportion of poisoning accidents involving household cleaning and polishing agents (24 per cent, 15 per cent, 10 per cent, and 11 per cent), and petroleum products (10 per cent, 4 per cent, 3 per cent, and 2 per cent) was noted in children in age groups after one year.

Of the children under five years of age, 56 per cent were males. In the age group five to nine, poisoning accidents were reported more frequently for males also, but in the age group 10 to 14, males and females were involved equally. After 15 years of age, females were reported to be involved more frequently than males.

Agent and Agent-Environment Interrelationships

Various types of medicines were ingested in about half the poisoning accidents. Internal medicines were ingested in 41 per cent of accidents and aspirin was reported in over 50 per cent of these cases; this drug was ingested in about one-fifth of all poisoning accidents and was ingested more frequently than any other substance reported. Where the type of aspirin ingested was known, "baby" type accounted for 84 per cent of this total.

Other medicines ingested were laxatives, cough medicines, tranquilizing agents, antihistamines, hormone preparations (such as corticosteroids, estrogens, and thyroid), analgesics other than aspirin, barbiturates, and vitamin and mineral preparations (including iron). External medications such as liniments, antiseptics, ointments, and camphorated oil preparations accounted for 14 per cent of all the accidents involving medicines.

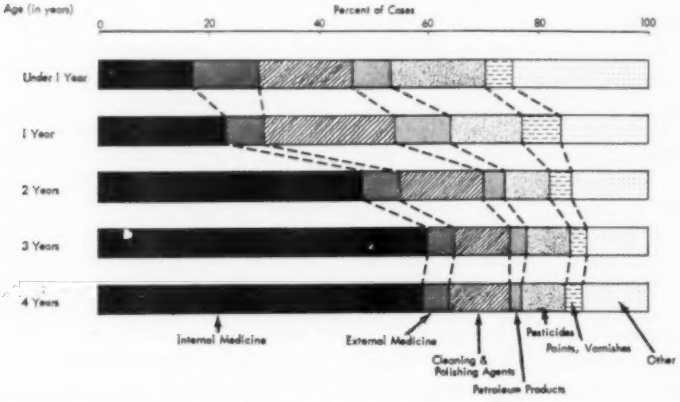

Figure 3—Type of Product as a Percentage of All Ingestions. Accidental Ingestions among Children under Five Years of Age, 1954-1958 (Individual Poisoning Reports by 59 Poison Control Centers)

Household cleaning and polishing agents were ingested in 17 per cent of all accidents. Soaps and detergents made up about one-fourth of this type of ingestion, while bleach was ingested almost as frequently. Furniture polish containing mineral seal oil, a petroleum distillate product, was the third most frequently ingested cleaning and polishing agent. Disinfectants, lye, and other corrosive substances were also ingested.

Ten per cent of all ingestions involved pesticides. Insecticides amounted to 77 per cent of all accidents involving pesticides. Rodenticides and herbicides were also ingested.

Petroleum products accounted for 6 per cent of the poisoning accidents and kerosene for half of these. Cigarette lighter fluid and gasoline were also ingested. Furniture polish containing petroleum distillate (which we classified as a household product) was ingested more frequently than either lighter fluid or gasoline.

Among the various paint and paint solvents ingested were turpentine, airplane cement, and nonlead-pigmented paints. Perfumes, hair solutions, and deodorants were the cosmetics most frequently ingested. Mushrooms and other plants or plant parts were ingested relatively infrequently.

Differences exist between the distribution of ingested substances among cases treated at poison control centers and that of substances among cases reported by telephone inquiry to the centers for toxicity and treatment information. Although medicines were most frequently ingested in both groups of reported cases, they accounted for a greater proportion among the children treated than among those reported by telephone inquiry. This is also true of petroleum distillate products. Household cleaning and polishing agents and cosmetics made up a higher proportion of the substances ingested about which information was sought from the centers

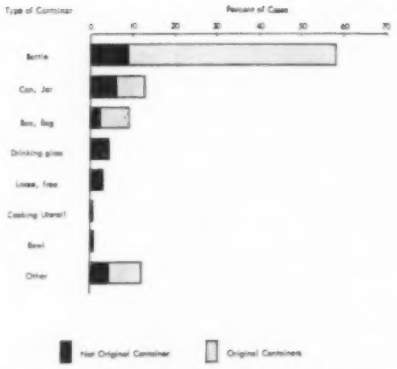

Figure 4—Containers Used for Poisonous Substances Involved in Accidental Ingestions among Children under Five Years of Age, 1954-1958 (Individual Poisoning Reports by 59 Poison Control Centers)

than did these same substances in cases treated by the centers.

Home follow-up investigations gave information about containers in which the ingested substances were found at the time of the accident (Figure 4). The substances were not in their original containers in one-third of all cases. Petroleum products were not found in original containers in over three-fourths of the cases, while pesticides and paints and paint solvents were not in original containers in one-half of cases involving these substances.

Bottles were the containers most frequently used for storage of poisonous or potentially poisonous substances when removed from the original containers. Also used were cans, jars, drinking glasses, boxes, bags, cooking utensils, and bowls. Certain poisons and potential poisons were found lying loose.

The younger the child involved, the more frequently the substance ingested was not found in its original container at the time of ingestion. Fifty-one per cent of all products ingested by children younger than one year, 40 per cent by

one-year-old, 28 per cent by two-year-old, 26 per cent by three-year-old, and 27 per cent by four-year-old children were not found in their original containers.

A comparison of the distribution of ingested agents reported from poison control centers grouped by geographic areas in the United States revealed certain differences (Table 1). Petroleum distillates and pesticides were proportionately higher in the southern states. Medicines, cosmetics and paints composed a higher percentage of cases in the northeast and in the Great Lakes area. The Rocky Mountain and Pacific Coast areas are not included here because reports have been received from only one center in these areas.

Since only ten poison control centers submitted case reports to the National Clearinghouse every month during 1958, there is no reliable monthly incidence data to determine seasonal variation. However, all the agents ingested in 1958 by children younger than five years were distributed by month of occurrence of the accident (Table 2). Medicines and cosmetics made up a higher proportion of all substances ingested in the colder months than in warmer months. Petroleum distillates made up a higher proportion of all substances ingested in the warm months; this was also true for pesticides and paint products. Household cleaning and polishing agents showed no consistent seasonal picture.

Considering the day of the week, it was found that fewer cases of accidental ingestion occurred on Saturday (13 per cent) or Sunday (11 per cent) than on other days of the week (15 per cent).

A consideration of the time of day at which poisoning accidents occurred revealed that 83 per cent of all poisoning accidents involving children younger than five years of age occurred between the hours of 7 a. m. and 7 p. m. Almost one-fifth of all accidents occurred between 9 and 11 a. m.; 16 per cent occurred in the period 11 a. m. to 1 p. m.; and 14 per cent were reported to occur in the 3 to 5 p. m. and the 5 to 7 p. m. time periods, each. No difference from these patterns were apparent for specific products.

Table 1—Type of Substance Ingested in 5,339 Accidental Poisonings Treated in 1958, by Region

DHEW Region[1]	Total		Medicines	Cleaning and Polishing Agents	Petroleum Products	Pesticides	Paints and Varnishes	Other
II	352	100.0%	59.1%	11.9%	7.1%	8.8%	7.9%	5.2%
III	1,354	100.0	53.6	14.6	7.0	11.2	4.6	9.0
IV	1,385	100.0	49.8	13.3	10.5	17.5	2.7	6.2
V	1,789	100.0	61.7	13.9	4.1	7.3	4.4	8.6
VI	350	100.0	50.6	18.2	4.9	10.6	4.6	11.1
Total, 5 regions[2]	5,339	100.0	55.3	13.9	6.8	11.5	4.3	8.2

[1] Cases were received from states given in Department of Health, Education, and Welfare regions as follows:
II. Connecticut, Massachusetts, New Hampshire, New Jersey, and Pennsylvania.
III. District of Columbia, Kentucky, and North Carolina.
IV. Alabama, Florida, Georgia, and South Carolina.
V. Michigan, Ohio, and Wisconsin.
VI. Iowa, Kansas, and North Dakota.

[2] Includes 109 cases from Washington State, from a region not otherwise reporting.

Source: Individual case reports submitted to the National Clearinghouse by 59 Poison Control Centers, DHEW-PHS Accident Prevention Program, Division of Special Health Services, October 1959.

Table 2—Type of Substance Ingested, by Quarter of Year in 4,486 Accidental Poisonings Reported During 1958

Type of Substance	Total		Quarters			
			March-May	June-August	September-November	December-February
Medicines	2,502	55.8%	56.1%	48.2%	53.5%	65.2%
Internal	2,289	51.0	50.8	43.2	48.4	61.0
External	213	4.8	5.3	5.0	4.1	4.2
Cleaning and polishing agents	651	14.5	15.4	14.0	14.6	13.6
Pesticides	500	11.1	10.7	15.4	11.2	6.6
Petroleum products	323	7.2	6.8	9.1	6.9	5.8
Paints, varnishes, etc.	206	4.6	4.7	5.7	4.8	2.8
Cosmetics	93	2.1	1.9	1.2	2.5	2.8
Plants	84	1.9	0.6	3.3	3.4	0.4
Other	127	2.8	2.8	2.8	3.2	2.4
Total	4,486	100.0	100.0	100.0	100.0	100.0

Source: Individual case reports submitted to the National Clearinghouse by 59 Poison Control Centers, DHEW-PHS Accident Prevention Program, Division of Special Health Services, October 1959.

Environment and Environment-Agent Interrelationships

The room of the house in which poisoning accidents occurred most frequently was the kitchen, comprising over 40 per cent (Figure 5). In almost two-thirds of all kitchen accidents, poisonous or potentially poisonous substances ingested were not in their customary storage places, and in over one-fourth of all kitchen accidents the substances were not in their original containers at the time of ingestion.

Accidents occurred next most frequently in the bedroom (22 per cent). The substances ingested in about three-fourths of bedroom accidents were not in their original storage places, and in over one-fourth of these accidents the substances were not in their original containers. In the bathroom (12 per cent of all accidents), ingested substances were not in their customary storage places in almost one-half of all such accidents and were not in their original containers in 15 per cent of these accidents.

The living room, dining room, basement, and hall were other areas where poisoning accidents occurred. Nine per cent of all poisoning accidents occurred outside the home, i.e., in the garage, on the porch, or "outside." Substances ingested outside the home were more frequently not in their customary storage places.

Medicines and household cleaners and polishes made up a greater proportion of substances which were ingested inside the house than those ingested outside the house. Medicines were ingested more frequently than any other type of substance in the bathroom, kitchen, living room, and dining room. The highest proportion of ingestions of cleaning and polishing agents occurred in the kitchen. Of those substances found outside the house, the greatest proportions were pesticides and petroleum products.

In the rooms of the house, poisons and potential poisons were found most frequently on furniture tops (27 per cent of all cases) and were usually ingested by children two years of age and

younger. This site was not the customary storage place for 86 per cent of the substances found here. Poisons and potential poisons were found next most frequently (20 per cent) in cabinets, usually by children three and four years of age. Almost three-fourths of the substances found in cabinets were reported to be in their customary storage places. The floor was reported to be the site where 11 per cent of ingested substances were found prior to ingestion, usually by children two years of age and younger. In 15 per cent of such cases, the floor was reported to be the customary storage place for the substances ingested.

In considering supervision of the child, it appeared that parents were presumably supervising the children involved in 84 per cent of the cases. In an additional 9 per cent of cases, adults other than parents were reported to be supervising. In only 7 per cent of poisoning accidents studied was the child supervised by another child or unsupervised.

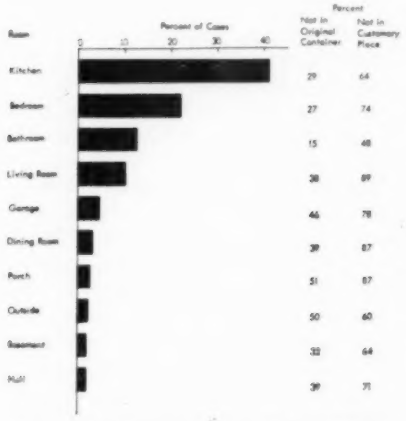

Figure 5—Room of the House Where Poisonous Substance Was Found, in Accidental Ingestions among Children under Five Years of Age, 1954-1958 (Individual Poisoning Reports by 59 Poison Control Centers)

Deaths

There were 30 deaths reported for the entire 14,069 poisoning accidents—a case fatality rate of 2.1 per 1,000 accidental ingestions. Of these deaths, 18 occurred in children under five years of age (case fatality rate=1.5). One-year-old children accounted for 10 deaths (case fatality rate=2.6). One death was reported from those poisoning accidents involving children five to nine years of age; no deaths for children between the ages of 10 and 15 years; and eight deaths for those 15 years and older (case fatality rate=1.8).

Medicines caused eight deaths, five in children younger than five years. Petroleum products were involved in eight deaths, seven of these occurring in children younger than five years. Six deaths were caused by ingestion of pesticides, four occurring in children younger than five years. The case fatality rates for children younger than five years for specific substances are as follows: medicines 0.9, petroleum products 10, pesticides 3.4.

Discussion

It must be recognized that reporting to a poison control center probably provides an incomplete description of the accidental poisoning problem of the city or area in which the center is located. Factors such as familiarity of physicians with the toxicity of ingested substances and with the treatment of poisoning due to these substances, as well as the location of the treatment facilities of a center in a hospital serving a certain socioeconomic or age group, influence the nature and number of poisoning accidents which are reported to the center. From the data presented, it is impossible to determine high-risk populations accurately.

However, the results of this study suggest that a number of predisposing and etiologic factors are operating to

produce poisoning accidents. Since most of the data pertain to children younger than five years, the age frequency distributions for poisoning accidents in which specific types of agents were ingested seem to be related to stages of growth and development.

The percentage of accidents in which medicines were ingested increased with the age of the child. The reverse of this pattern occurred with inedible household chemicals (cleaners and polishes, petroleum products, and paint and paint solvents). Younger children were also more likely to ingest those poisons and potential poisons which were not in original containers prior to the accident. It was further found that younger children most frequently ingested substances which had been found on the floor or on furniture tops, while older children seemed most frequently to ingest substances which had been stored in cabinets and on open shelves.

Application of some simple concepts about the growth and development of infants and young children to the host-agent-environment interrelationships so far discussed makes these findings more meaningful.[9] Children two years of age and younger can reach, crawl and stand, are beginning to walk, and put everything into their mouths. However, many of them have not yet learned to climb. These children are more likely to ingest substances which they find within their reach, i.e., substances found on the floor or on the tops of low-lying pieces of furniture; in this study these substances were inedible household preparations.

Children between the ages of two and four years are able to climb and open doors. They are likely to discover substances stored on high shelves or in cabinets; these were shown to be medicines in this study. Flavored medicine (sometimes called "candy" by well-meaning parents) may tempt children older than two years to seek out and ingest potential poisons such as "baby" aspirin, flavored laxatives, and brightly colored and syrupy cough medicines. Mellins, in describing the experience of the poison control center in Chicago, reported that children who were old enough to verbalize stated that they sought out and ate flavored "baby" aspirin because they like the taste.[10]

Color may be a predisposing factor for the accidental ingestion of various medications by children. In a recent study reported from England, it was found that children were attracted more to brightly colored and brown ("chocolate") tablets.[11]

Two other predisposing factors which seem to be important in the etiology of poisoning accidents might be described by the terms "carelessness" and "unawareness." These seem to be reflected by those accidents in which the poison or potential poison ingested was not in its customary storage place and in which no effort had been made to store inedible household chemicals out of the reach of young children.

The transfer of poisons and potential poisons from original containers to others, such as drinking glasses, food cans and jars, cooking utensils and bowls, has been commented upon frequently and will not be discussed here, except to point out that this practice seems to involve petroleum products, pesticides, and paints and paint products more frequently than medicines or cleaners and polishes. Whether such practices indicate ignorance of potential toxicity or an attitude of immunity to accidents by parents is unknown. The data presented here can give little insight to the basis for these practices.

The differences existing between the percentage distribution of poisons and potential poisons ingested in poisoning accidents treated by poison control centers, and the distribution of these substances in cases reported to the centers as the result of telephone inquiries for toxicity and treatment information

probably reflect familiarity of physicians with pharmacologic and toxicologic aspects of drugs and petroleum products. The increased frequency of telephone calls for information concerning various household polishes and cleaners and cosmetics probably reflects the relative lack of knowledge concerning ingredients and the toxicity of these agents.

The data concerning seasonal pattern of poisoning accidents is in agreement with previous studies based on data from an individual poison control center.[7] In general, medicines are accidentally ingested most frequently in cold months. The highest proportion of accidents involving pesticides occurs in warm months. A higher proportion of poisoning accidents involving petroleum products also occurs in the warmer than in the cooler months. Carithers has suggested that an infant is more likely to drink kerosene in the summer because of thirst.[12]

A higher proportion of poisoning accidents involving petroleum products and pesticides was reported from the southern United States. Bain[5] has noted that kerosene was one of the products contributing to the high accidental poisoning death rate for children in the southern states. The lethal effect of petroleum products in comparison to that of household cleaners and polishes or medicines is noticeable also in this study. The inherent toxicity of the agent ingested, although a secondary factor with respect to causation of a poisoning accident, is nevertheless of very practical importance.

There are other aspects of poisoning accidents which as yet have not been studied. A carefully planned epidemiologic investigation of multiple poisoning accidents in the same child or family may further elucidate important host factors. Wehrle, et al., studied the occurrence of repeated poisoning accidents in the same child and in the same family as part of an epidemiologic study of poisoning accidents in Syracuse.[13] Their data appear to indicate an increase in risk associated with prior poisoning experience.

There is a need for more specific knowledge concerning the accidental ingestion of "baby" aspirin in order to determine whether this product is so frequently ingested because of its taste or because of its widespread availability. A study to determine the influence, if any, of hunger and thirst on the frequency of poisoning accidents and the types of poisons and potential poisons ingested would be valuable. These and many more studies are needed in order to understand more fully the causative mechanisms underlying the accidental ingestion of poisons and potential poisons.

Summary

1. Some 15,000 reports of poisoning incidents from 59 poison control centers in 20 states are summarized and analyzed.

2. Approximately 90 per cent of the incidents involved children under five years of age, and this analysis is largely confined to them.

3. Fifty-six per cent of the children under five were males. In the age group five to nine, males also predominated. In the age group 10 to 14, males and females were equally involved, and in that over 15 years, females exceeded males considerably.

4. Where age in months was available, the period in which poisoning occurred most frequently was 18-24 months. Almost one-fourth of all poisoning cases in children younger than five years occurred in that age group, while three-fourths occurred in that between 12 and 36 months.

5. Considering age in years, two-year-olds ingested internal and external medicines and cosmetics more frequently than did any other age group. House-

hold cleaning and polishing agents, pesticides, petroleum products, and paint and paint solvents were ingested most frequently by one-year-old children.

6. Considering ingestions by each age group, it was found that internal medicines comprised a higher proportion of substances ingested by three- and four-year-old children than by other age groups, and this proportion increased with age. External medications and pesticides were ingested in highest proportion by one-year-olds and declined with age, as did cleaning agents and petroleum products.

7. Various types of medicines accounted for half the poisoning incidents reported. Aspirin (largely "baby" type) accounted for half the internal medicine group and for 20 per cent of all accidents. Household cleaning and polishing products were ingested in 17 per cent, pesticides in 10 per cent, and petroleum products in 6 per cent of all poisoning accidents; lesser amounts of paints, cosmetics, and plants were ingested.

8. Telephone inquiries to the centers were concerned with ingestion of household cleaning and polishing agents and cosmetics in higher proportion than were cases treated at the centers.

9. Poisonous or potentially poisonous substances were not in their original containers in one-third of all cases. Petroleum products, pesticides, and paint solvents were the most frequent offenders, while bottles were the most frequent substitute containers. The younger the child, the more frequently he ingested substances in substitute containers.

10. Medicines and cosmetics were ingested proportionately more frequently in colder months, with petroleum products, paint solvents, and pesticides more often in warmer months.

11. The kitchen was the most frequent place of ingestion, followed by the bedroom and bathroom. Most products were not in their original storage places, but were found on furniture tops and on the floor.

12. Parents were presumably supervising the activity of the children involved in most cases, and in only 7 per cent of cases was there no supervision.

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The first part of this study appeared in the November Journal. This concluding part reports the findings on the occurrence of accidental poisonings in a random sample of families in Syracuse, N. Y. Problems of reporting and prevention are discussed on the basis of the findings.

THE EPIDEMIOLOGY OF ACCIDENTAL POISONING IN AN URBAN POPULATION

II. PREVALENCE AND DISTRIBUTION OF POISONING

P. F. Wehrle, M.D.; P. A. Day, M.D.; J. P. Whalen, M.D.; J. W. Fitzgerald, M.D.; and Virginia Goddard Harris, M.D.

ACCIDENTAL ingestion of common household substances represents an important cause of morbidity and mortality, particularly among young children.[1,2] As is the case in other problems, a clear definition of those persons at greatest risk is needed to design effective prophylactic methods and to avoid wasteful application of these methods. The data collected during the interviews to be described have been analyzed to define the prevalence of poisoning and the circumstances surrounding accidental ingestion of potentially harmful substances in the study area selected.

Material and Methods of Study

The selection of the study population and the method of interviewing each of the 1,069 families have been discussed in the preceding paper.[3] In this study accidental poisoning is defined as the ingestion of a toxic substance not intended for internal use, or, if intended for oral administration, potentially harmful in the amount consumed. The presence of symptoms and treatment sought were recorded but were not considered in the definition of an episode.

Results

The substances reported to have been ingested during the three time intervals selected prior to the single interview are listed in Table 1. Various types of medicine comprised more than half of all the episodes encountered. Flavored aspirin accounted for nearly half the medicines and approximately one-fourth of all poisoning episodes. Unfortunately, data regarding the availability of different types of aspirin in the households studied were not recorded. The remainder of the items considered is similar in distribution to that found in reviews of hospital experience.

One of the defects often found in the retrospective collection of data is shown in this table. One-fifth of the entire previous year's poisoning experience was reported for the one-month

Table 1—Substance Ingested by Product Classification and Interval Prior to Interview (Study Group of 1,069 Families)

Substance Ingested	Interval Between Ingestion and Interview			Total	Per cent Total
	<1 month	2-12 months	>1 year		
Medicine					
Aspirin, adult	0	2	4	6	5.6
Aspirin, flavored	3	10	14	27	25.3
Other internal medicine	1	8	13	22	20.5
Medicine for external use	1	2	5	8	7.5
Total medicine	5	22	36	63	58.9
Miscellaneous					
Household products	0	5	6	11	10.3
Petroleum products	0	1	9	10	9.3
Pesticides	0	1	5	6	5.6
Paint and paint products	0	0	3	3	2.8
Cosmetics	2	0	4	6	5.6
Other	0	0	8	8	7.5
Total miscellaneous	2	7	35	44	41.1
Grand Total	7	29	71	107	100.0

period immediately preceding the interview. The previous year accounted for one-third of the episodes recalled for the family group since its inception. This strongly suggests considerable memory loss regarding poisoning episodes. Aspirin appeared to be particularly notable in this respect.

In addition to the episodes recorded in this table, 21 persons were reported as having been poisoned by gas or vapor of various types. This was most frequently a result of a failure of heating equipment and occurred almost entirely in the lower socioeconomic groups. The persons affected rarely sought medical attention and represented an atypical group in age distribution. Poisoning of this type will not be considered further in this study.

Two deaths were reported among the cases recorded in the study group. Both were due to medicine intended for internal use. The first was of a year-old boy who had swallowed an unknown quantity of antihypertensive medicine within the year preceding interview. The other was of a four-year-old boy who had died several years prior to the study as a result of ingesting a strychnine-containing medicine intended for another member of the family.

Physicians were consulted in only 79, or 74 per cent of the 107 poisoning episodes recorded. In Table 2 it is noted that the proportion of persons who consulted physicians or required hospitalization or emergency room treatment was not different in the various socioeconomic groups studied. While it it apparent that poisoning symptoms will usually be brought to a physician's attention, some informants were not aware of the potential hazard of aspirin. Approximately one-third (36 per cent) of accidental aspirin ingestion was not brought to a physician's attention. This may be contrasted with the experience in other types of poisoning, where 80 per cent or more had consulted physicians.

As noted in Table 3, proportionately

more poisoning episodes were discovered in the survey than were reported through the hospital reporting system. If the 2 per cent sample surveyed is truly representative of Syracuse, one would have expected about 1,800 (36×50) episodes to have occurred during the single year in the city, of which approximately 1,300 would have been brought to either a physician or a hospital for treatment. It therefore appears that reporting of poisoning episodes in Syracuse is only about 15 per cent complete when one considers hospital reporting alone. When reports to the poison information center are also included, this figure is approximately double. It should be noted that although the total figures for the information center are larger than for the hospitals, many of the requests for information are from reporting hospitals and nearly half of the remainder are from suburban or distant communities. This is to be expected, since the information center was established to serve the entire region. Therefore, only about half of the information center calls represent otherwise unreported cases for the city of Syracuse.

Although the correlation between the types of substances encountered in the survey population and from hospital reporting is good, the information center data are quite different. Aspirin accounts for only about 1 per cent of the calls to the information service, and other medicines are correspondingly low. The categories for household products, cosmetics, and miscellaneous items are correspondingly larger. This is to be expected, since physicians (who account for 90 per cent of the information center requests) are less familiar with the composition and pharmacologic action of items in the latter categories. This difference clearly illustrates some of the problems involved in determining the rate and relative importance of various substances using data derived from either hospital reporting or poison information center experience.[2,4,5]

All episodes of poisoning encountered in the survey are recorded by age and sex in Table 4. The most frequent age of involvement was two years, a single year accounting for more than one-third of all poisonings. Several of the episodes of poisoning among older persons were due to errors in therapy, one medication being mistaken for another. Those with age recorded as unknown predominantly involve children accidentally poisoned one or more years before the survey interview whose parents could not recall their exact age at the time of

Table 2—Poisoning Episodes by Type of Treatment Sought (Study Group of 1,069 Families)

Type of Treatment	Socioeconomic Area* Studied						All Areas, Total	
	I and II		III and IV		V and VI			
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent
Physician or hospital	10	67	31	74	38	76	79	74
No physician consulted	5	33	11	26	12	24	28	26
Total	15	100	42	100	50	100	107	100

* See definition of various areas given in Part I of this presentation; Area I is the highest, Area VI the lowest.

Table 3—Percentage Distribution of Substances Ingested by Persons in Study Group, as Compared with Distribution of Poisoning Episodes Reported from Syracuse Hospitals and Poison Information Center During an Identical 12-month Period (1957-1958)

Substance Ingested	Total Survey Per cent	Source of Information		
		Survey Per cent	Hospitals Per cent	Information Center Per cent
Medicine				
Aspirin	30.9	41.7	35.3	1.3
Internal medicines, other	20.5	25.0	36.3	18.3
External medicines	7.5	8.3	3.2	10.9
Miscellaneous				
Household products	10.3	13.9	6.8	20.6
Petroleum products	9.3	2.8	1.1	1.6
Pesticides	5.6	2.8	5.3	12.1
Cosmetics	5.6	5.6	2.1	9.3
Number of episodes studied	107	36	190	514

NOTE—Columns do not total 100 per cent due to the omission of miscellaneous groups.

ingestion of the substance, although other details of the episode were recalled more clearly.

The age-specific rates for the one-year period prior to the interview in the various socioeconomic areas surveyed are noted in Table 5. Grouping of the six areas into three categories was necessary due to the small number of cases. It is immediately apparent that there is no increased risk in any of these combined socioeconomic areas. The striking difference in rates by age is consistent in all study areas. Of the cases occurring in the zero-to-four-year age group, 14 were recorded in two-year-olds, giving an age-specific rate of 11.6 per 100 per year at that age. There was also a rather striking sex difference in this younger group. The rate for males aged one to four years was 8.7 per cent per year, while that for females was 5.2 per cent per year, based on 17 and 10 episodes, respectively.

The rate in families is of course greatly influenced by the presence or absence of young children. It is interesting to note that among the 1,069 families interviewed, one or more episodes of accidental poisoning had occurred in 34 (3.2 per cent) during the previous year, and in 89 (8.3 per cent) at any time prior to the interview. When only families of five or more members are considered, these rates increase considerably. The latter (6.5 per cent) had a history of poisoning within one year, and 23 per cent had a similar history for the entire period prior to the interview. In view of the probable memory loss previously mentioned, these figures are indeed striking and offer a further indication of the magnitude of this problem.

Since it is possible that large families or families with several members under the age of five or ten years may be at higher risk, the composition of the families of the two-year-old children (age of greatest poisoning prevalence) was studied. As shown in Table 6, there appears to be no real difference in either

the number of young siblings or slightly older siblings in these families. The total family size was also similar.

Although no apparent differences existed between these families permitting the identification of special risks on the basis of age of siblings, number of siblings or family size, some families were identified that had experienced multiple episodes of accidental poisoning. As might be expected, these involved the same person as well as different members of the same family. None occurred simultaneously in more than a single member.

In Table 7, families are classified by the number of episodes involving one or more members of these families. Of the 1,069 families interviewed, 89 reported at least one episode of accidental ingestion of a potentially harmful substance at some time prior to the study interview, giving a rate of 8.3 per 100 families interviewed. Of these, 14 families reported multiple episodes involving either different persons at different times or repeated episodes involving the same person. This represents 15.7 per cent of the total families reporting one or more poisonings and therefore suggests that repeat episodes may occur in families already reporting one instance of poisoning somewhat more frequently than single instances in the general population studied. Several factors complicate this analysis, some of the more prominent being memory factors (repeats may be recalled more easily than single ingestions). In addition, family size and composition may differ as between repeaters and persons involved in single episodes, and other factors may also be present which are impossible to evaluate with a sample of this size. The problem of repeated episodes in families is currently under study and will be reported at a later date.

The most striking feature regarding prevention appeared to be the location of the substance ingested. It was usually in its proper container (in the case of over 70 per cent of episodes reported) but often in an unusual and accessible location. In Table 8 the location of medicines and other substances ingested in the home is recorded. Of the total of 107 episodes, 94, or 90 per cent, occurred within the home.

Table 4—Episodes of Accidental Poisoning by Age When Poisoned, by Sex and by Interval Prior to Study (Study Group of 1,069 Families)

Age in Years	Interval Prior to Interview								
	Less than One Year			More than One Year			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	0	0	0	0	1	1	0	1	1
1	4	0	4	3	8	11	7	8	15
2	7	7	14	11	12	23	18	19	37
3	4	0	4	2	2	4	6	2	8
4	2	3	5	2	1	3	4	4	8
5-9	3	2	5	1	1	2	4	3	7
10-64	0	1	1	3	2	5	3	3	6
65+	1	2	3	0	0	0	1	2	3
Unknown*	0	0	0	10	12	22	10	12	22
Total	21	15	36	32	39	71	53	54	107

* Exact age at poisoning not recalled by parent (predominantly children).

Table 5—Accidental Poisoning During 12-Month Period, by Age and Socioeconomic Area, Syracuse, N. Y., 1958 (Study Group of 1,069 Families)

Age Group	Areas I and II			Areas III and IV			Areas V and VI			Total Areas		
	Population	Cases	Rate*	Population	Cases	Rate*	Population	Cases	Rate*	Population	Cases	Rate*
0-4	71	5	7.1	190	9	4.7	247	13	5.3	508	27	5.3
5-9	77	—	—	187	4	2.2	223	1	0.4	487	5	1.0
10-19	115	—	—	224	—	—	309	—	—	648	0	0.0
20-64	337	1	0.3	712	—	—	996	—	—	2,045	1	†
65+	66	—	—	142	3	2.1	200	—	—	408	3	0.7
Total	666	6	0.9	1,455	16	1.1	1,975	14	0.7	4,096	36	0.9

Groups of Special Interest

Age Group	Population	Cases	Rate*
1-4 years	390	27	6.9
2 years only	118	14	11.6
1-4 years, male	196	17	8.7
1-4 years, female	194	10	5.2
Total male	1,940	20	1.0
Total female	2,156	15	0.7

* Rate per 100 persons per year.
† Less than one-tenth of 1 per cent.

From the data in this table, confirming many reviews of the experience of poison centers and hospitals, one may conclude that the substances ingested were not only easily accessible but were not in their proper locations. This is best shown in the case of medicines, where only about 10 per cent were in their proper location (medicine chest) at the time ingested. Indeed, the kitchen exceeded all other areas in the home as a repository for accessible medicines.

Although at least one parent was reported to have been at home in 91 of the 94 episodes (95 per cent) which occurred within the home, it is not possible to evaluate the quality of parental supervision.

Discussion

An attempt has been made to assess the true incidence of accidental poisoning in several socioeconomic divisions of an urban area by an interview technic involving randomly selected families. No instances of suicidal poisoning were volunteered by the respondents. Poisoning by gases and vapors was not included in the analysis, since this type of poisoning is somewhat unique in its distribution.

One of the features deserving special consideration is the apparent lack of any geographic or socioeconomic aggregation of cases. Although there has been considerable speculation regarding the distribution of accidental poisoning among various socioeconomic groups, little information has become available. Hospital report data from New York City have been interpreted as evidence for an increased frequency of poisoning among lower socioeconomic groups, but the possible bias introduced by this method of reporting was emphasized by the author.[4] Certain specific types of poisoning, notably lead, show a striking prevalence in slum areas.[6,7] Others, par-

ticularly kerosene and lye, may appear with increased frequency among racial groups or in large geographic areas.[8] A prior attempt to determine the pattern of accidental poisoning due to all causes in an urban area did not suggest any association with socioeconomic status; however, accurate rates were not presented and the numbers of persons at risk in each category were not adequately delineated.[9]

In the present study it is not possible to calculate accurate rates for the total of 107 episodes reported, due to population changes during the earlier period. Yet the proportions of episodes reported from each of the areas considered were similar to the pattern of equal socioeconomic distribution of poisonings observed during the previous year. This would appear to offer some further evidence against any increased frequency of poisoning among certain socioeconomic groups in the city studied.

A second feature of the present study deserving emphasis is the extremely high annual rate of accidental poisoning observed among young children in the study population. Nearly 12 per cent of the two-year-olds included had ingested a potentially harmful substance within the year preceding the interview. This figure may be regarded as conservative, since the differences in prevalence in the three time periods considered suggest that substantial memory loss occurred. This extreme frequency of accidental poisoning in this age group is not widely appreciated by either physicians or parents.

The problem of flavored aspirin, the most commonly reported poisoning substance, is one which requires no further emphasis here, since considerable attention has been directed toward this agent[10] and many manufacturers are currently providing safety caps for their bottle containers.[11] Perhaps the addition of even more prominent warning labels than those in current use might increase parental awareness of this particular hazard.[12]

The contrast between data collected by random interview and those collected from hospitals and poison information centers is interesting although not unexpected. Reporting of accidental poisoning in Syracuse is admittedly incomplete. It should be noted that reporting is available from the larger hospitals and the poison information center. Therefore, one may conclude that it is probably as complete as may reasonably be expected in any city. Only about one episode in four was reported through these technics, while medical attention was sought in three episodes out of four.

Although a definite age and sex pre-

Table 6—Children Aged 2 Years, By Poisoning Status Within the Previous Year Correlated with Number of Siblings By Age and Size of Family (Study Group of 1,069 Families)

Status of 2-year-old	Number of Families	Family Members				Total Family Members*	
		Siblings 0-4 Years		Siblings 0-9 Years			
		Number	Mean	Number	Mean	Number	Mean
Poisoned	14	7	0.5	18	1.3	73	5.2
Not poisoned	104	81	0.8	171	1.6	528	5.1
Total or mean	118	88	0.7	189	1.6	601	5.1

* All ages included.

Table 7—Multiple Episodes of Poisoning in Families Based on History of Poisoning at Any Time Prior to Study (Study Group of 1,069 Families)

No. of Episodes	Families Interviewed: Number with Poisoning	Families at Risk	Rate per 100
At least one episode	89	1,069	8.3
Multiple episodes only	14	89	15.7

disposition toward accidental poisoning exists, it is difficult to find other clear epidemiologic features which may be readily utilized in prevention. Neither the individual nor the family risk of repeating seems high enough to justify special efforts for those with a history of a single previous episode. The possibility of inadequate supervision exists, but a parent was at home in a majority of the episodes reported.

In view of the diffuse nature of this problem and its relatively high incidence, it is reassuring to find at least two logical points of attack for prevention. One of these would appear to lie in further efforts to make parents aware of the potential hazard of medicines and of many common household products as a part of a general accident prevention program.[5,13] Adequate labeling laws are imperative in this approach. The other lies in keeping these potentially harmful substances in their proper places and making them inaccessible to toddlers through safety caps and the use of locked cupboards. These areas seem to be the most logical ones to emphasize in an attempt to reduce this common household health problem.

Since these approaches cannot be expected to be completely effective, and since the development of new and often hazardous preparations for both household and prescription use continues to increase the number of potential problems for both parent and physician,[14] the need for other measures should be stressed. These are the increased availability of poison information services to physicians[2] and the establishment of facilitie for prompt treatment of emergencies in hospitals[15] and in physicians' offices. It is only through a concerted effort toward both prevention and therapy that appreciable gains may be realized against this health hazard.

Table 8—Location of Substance Ingested by Persons Involved in Poisoning Episodes (Study Group of 1,069 Families)

Room in Home	Medicines and Aspirin	Other Substances	Totals: Number	Per cent
Bathroom	17*	1	18	19.2
Bedroom	12	6	18	19.2
Kitchen	20	11	31	33.0
Dining room	4	2	6	6.3
Other	8	13	21	22.3
Total	61	33	94	100.0

* Seven were obtained from medicine chest.

Summary

The occurrence of accidental poisoning in a random sample of 1,069 households in Syracuse, N. Y., was studied. Similar rates of poisoning were observed in all socioeconomic areas. The majority of the poisoning episodes occurred among young children. Nearly 12 per cent of children two years of age had experienced an episode within the 12 months prior to the study. In families of five or more members 6.5 per cent of families had experienced accidental poisoning in at least one member within the previous year and 23 per cent of these larger families had a history of poisoning at some time in the past. Only 76 per cent of these episodes had the benefit of consultation with a physician. This seems due primarily to a lack of awareness of the potential hazard of aspirin and some of the common household products.

Lack of awareness of the potential hazard of household medicines and other substances was common. The related observation that the substance ingested was seldom in its proper (and inaccessible) place was made.

Although these observations do not offer a panacea for this problem, they serve to emphasize the need for continued education of parents during routine health supervision as children enter the danger age of one to four years. Safety caps and safe storage places for medicine and household products offer at least a partial solution to the problem.

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The field of school and college health programs is changing and it is important to know the trend and directions of change. This study endeavors to establish such trends and to determine their significance.

THE SIGNIFICANCE OF CURRENT TRENDS IN SCHOOL AND COLLEGE HEALTH PROGRAMS

Mary K. Beyrer, Ph.D.

THIS STUDY WAS made to determine the significance of current trends in the evolution of the school and college health program. The term "trend" has varied connotations; it means many things to many people, but its exact meaning is not identified by the majority of its users. From an analysis of the definitions found in dictionaries and other reference publications, the following statement was formulated for this study:

> A trend may be considered as a general prevailing movement, changing in a specific and indicated direction, and thus reflecting a recognizable change of tendency or emphasis.

This definition does not pinpoint a trend as necessarily a common practice, but rather as an acceptable tendency or movement in a certain direction. Many trends may not be in action universally, yet they are universally acceptable in theory.

Procedure

Identification was made of 104 trends reflected in the 300 pieces of literature published on school and college health education during the period from January, 1948, to May, 1958. The trends were grouped according to similarity of subject matter in these five categories: the General School and College Health Program, School Health Service, Healthful School Living, Health Instruction, and the College Health Program. For purposes of clarification, trends in school health education as outlined in a 1943 study* were compared with the trends identified in this study.

A check list containing the trends was sent to selected school and college health educators, public health educators, and general educators. These three educator groups were asked to assign a value judgment to each trend. The value judgments were of three types: "A" indicating trends of utmost importance and significance which should definitely be furthered, strengthened, and given great impetus; "B" denoting trends of lesser value but with minor significance; "C" signifying trends of little or no value which were insignificant and definitely need not be promoted.

Data compiled from the check lists

* Edith M. Lindsay, "Origins and Development of the School Health Movement in the United States" (unpublished Ed.D. dissertation, Stanford University, 1943).

were treated by two methods. To determine which trends were assigned the highest number of "A," "B," and "C" evaluations, rankings of ten places were made; these rankings computed for total number of respondents and for each of the three educator groups (Tables 1-7). The Chi-square test was also applied to the judgements assigned each trend by each of the three educator groups to ascertain whether there was a statistical difference of opinion among the responses of the three groups.

Number of Check Lists Returned

Of the 144 check lists distributed, 107, or 72.3 per cent were usable returns. Of the total respondents, 55 or 51.4 per cent, were school health educators; 25 or 23.4 per cent, were public health educators; and 27, or 25.2 per cent, were general educators.

Findings

Comparison of Trends in School Health Outlined by Lindsay in 1943 with Those Identified in This Study

The most comprehensive piece of related research concerned with trends in the field of school health is an unpublished dissertation at Stanford University in 1943, "Origins and Development of the School Health Movement in the United States," by Edith M. Lindsay. It contains in essence the tendencies and directions of most phases of the school health program through the year 1940. Therefore, the trends identified for this study were compared with trends established by Lindsay. Of the 39 statements that named or inferred trends in the earlier study, 31 of the total of 104 trends in this study were deemed similar in general content. Of the 39 trends in the 1943 research, 16 were not identified in the 1958 study; 73 of the trends established in the 1958 study were not mentioned in the earlier research. Of the trends in the two studies that were similar, many exhibited slight variations in 1958; these were implementations of the original activity as described by Lindsay.

Treatment of Data by Rankings*

The following statements indicate where agreement existed among the three educator groups, or by the total respondents, concerning the value judgments which were assigned each trend:

a. Although no single trend received 100 per cent of any one of the three value judgments from the total respondents, two trends received 94 and 95 per cent "A" evaluations (indicating utmost value and significance), respectively: (1) Increasing recognition that the emotional health of the teacher influences the emotional tone of the classroom, and (2) growing acceptance of the health program as a vital and necessary part of the total educational panorama.

b. A large number of trends received a majority of judgments indicating that they were of utmost value and significance. The ten highest-placed trends, assigned this value judgment by at least 83 per cent of the total respondents, were:

(1) Trend 63—Increasing recognition that the emotional health of the teacher influences the emotional tone of the classroom
(2) Trend 2—Growing acceptance of the health program as a vital and necessary part of the total educational panorama
(3) Trend 64—Emphasizing the importance of the health of all school personnel
(4) Trend 96—Increasing the opportunities for inservice education of professional personnel in the form of workshops and conferences
(5) Trend 73—Producing action in health education through the functional approach to health instruction
(6) Trend 74—Accepting the purpose of health education as a process which favorably influences knowledge, attitudes and practices

* Selected tables of rankings containing additional findings are shown throughout this report.

Table 1—"A" Value Judgments as Assigned to Trends by 55 School Health Educators (Highest Ten Places)

Rank	Per cent of Total*	Category†	Trend
1.5	95	GP	Growing acceptance of the health program as a vital and necessary part of the total educational panorama (2)
1.5	95	CP	Enlarging and enriching the effectiveness of the basic college required course (92)
3	93	HSL	Increasing recognition that the emotional health of the teacher influences the emotional tone of the classroom (63)
6	91	SHS	Changing the philosophy related to the responsibility for medical and dental examinations from the educational institution to the family physician and dentist (50)
6	91	HI	Stressing the emphasis on desirable student behavior and practices as the end product of the health instruction program (75)
6	91	HI	Acknowledging the need of a variety of methods, group procedures, and resources in teaching health (83)
6	91	CP	Accepting the basic health course as a part of a student's general education, particularly on the college level (93)
6	91	CP	Recognizing the need for basic professional health courses for all prospective teachers (96)
10.5	89	SHS	Organizing the school health program with the realization that the family has the primary responsibility for the health of the student (41)
10.5	89	HSL	Emphasizing the importance of the health of all school personnel (64)
10.5	89	HI	Producing action in health education through the functional approach to health instruction (73)
10.5	89	HI	Organizing planned, flexible, and sequential health curricula in the schools (81)

* 55 = 100 per cent.

† Category code: GP = General Program
SHS = School Health Services
HSL = Healthful School Living
HI = Health Instruction
CP = College Program

Value judgments: "A" = utmost value and significance; "B" = lesser value and minor significance; "C" = little or no value and insignificant.

Table 2—"A" Value Judgments as Assigned to Trends by 25 Public Health Educators (Highest Ten Places)

Rank	Per cent of Total*	Category†	Trend
1.5	100	SHS	Involving the classroom teacher to a greater degree as part of the health team in the health service program (45)
1.5	100	SHS	Recognizing the value of the continuous observation and appraisal of students by all teachers (46)
4	96	GP	Growing acceptance of the health program as a vital and necessary part of the total educational panorama (2)
4	96	HSL	Increasing recognition that the emotional health of the teacher influences the emotional tone of the classroom (63)
4	96	SHS	Utilizing the many facets of the health service program containing opportunities for learning about health and its protection (43)
6.5	92	HI	Producing action in health education through the functional approach to health instruction (73)
6.5	92	CP	Recognizing the need for basic professional health courses for all prospective teachers (96)
8	88	HI	Widening interest in the understanding of motivation as it is involved in the psychology of teaching health (76)
10.5	84	HSL	Emphasizing the importance of the health of all school personnel (64)
10.5	84	HI	Accepting the purpose of health education as a process which favorably influences knowledge, attitudes, and practices (74)
10.5	84	HI	Stressing the emphasis on desirable student behavior and practices as the end product of the health instruction program (75)
10.5	84	HI	Growing acceptance of the problem-solving method as an approach to the consideration of health problems (88)

* 25 = 100 per cent.
† Category code: See Table 1.
Value judgments: See Table 1.

Table 3—"A" Value Judgments as Assigned to Trends by 27 General Educators (Highest Ten Places)

Rank	Per cent of Total*	Category†	Trend
1	96	HSL	Increasing recognition that the emotional health of the teacher influences the emotional tone of the classroom (63)
2	89	GP	Growing acceptance of the health program as a vital and necessary part of the total educational panorama (2)
4	85	GP	Accepting the positive concept of health as a state of total well-being (5)
4	85	GP	Emphasizing the importance of the health of all school personnel (64)
4	85	HSL	Emphasizing the educational, nutritional and sanitary aspects of the school food service (72)
8	81	GP	Widening concern and expanding knowledge regarding child growth and development (4)
8	81	GP	Clarifying the role of the school in handling student personality and behavior problems (18)
8	81	SHS	Organizing the school health program with the realization that the family has the primary responsibility for the health of the student (41)
8	81	HSL	Promoting the health and welfare of students by providing a school program organized and administered with these factors in mind (66)
8	81	HI	Accepting the purpose of health education as a process which favorably influences knowledge, attitudes and practices (74)

* 27 = 100 per cent.
† Category code: See Table 1.
Value judgments: See Table 1.

(7) Trend 5—Accepting the positive concept of health as a state of total well-being

(8) Trend 41—Organizing the school health program with the realization that the family has the primary responsibility for the health of the students

(9) Trend 46—Recognizing the value of the continuous observation and appraisal of students by all teachers

(10) Trend 45—Involving the classroom teacher to a greater degree as part of the health team in the health service program

c. The five trends judged by at least 50 per cent of the total respondents to be of lesser value and minor significance were concerned with the increase in the quantity of health education literature, health education textbooks, and resources available from commercial organizations, together with changes in the basic professional terminology and the utilization of parents and nonschool personnel in administering screening tests.

d. As groups, the three types of educators differed regarding the specific trends to which they assigned the greatest number of evaluations denoting little or no value. However, the judgments of the total respondents ranged from 37 per cent to 18 per cent agreement that ten trends had little or no value and were insignificant:

(1) Trend 11—Suggesting changes in the basic professional terminology used in health education

(2) Trend 91—Including driver training and driver education in school health and health education programs

(3) Trend 47—Utilizing parents and other nonschool personnel in administering screening tests, such as those for vision and hearing

(4) Trend 51—Releasing the student during school hours to obtain medical and dental treatment

(5) Trend 85—Increasing number of acceptable health resources available from commercial organizations

(6) Trend 86—Increasing number of text-

Table 4—"B" Value Judgments as Assigned to Trends by the Total of 107 Respondents (Highest Ten Places)

Rank	Per cent of Total*	Category†	Trend
1	60	HI	Increasing number of textbooks published for school and college health courses (86)
2	53	GP	Suggesting changes in the basic professional terminology used in health education (11)
3	52	HI	Increasing number of acceptable health resources available from commercial organizations (85)
4.5	51	GP	Augmenting the quantity of literature in the field of school and college health education (13)
4.5	51	SHS	Utilizing parents and other nonschool personnel in administering screening tests, such as those for vision and hearing (47)
6	44	GP	Providing of leadership by professional health organizations in school and college health programs (34)
7	41	GP	Analyzing the health misconceptions which exist among students and teachers (24)
9	40	GP	Attempting to include health learning experiences and concepts in all parts of the school and college curriculum (10)
9	40	SHS	Releasing the student during school hours to obtain medical and dental treatment (51)
9	40	HI	Implementing the concepts of correlation and integration of health with the majority of subjects in the school program (82)

* 107 = 100 per cent.
† Category code: See Table 1.
Value judgments: See Table 1.

Table 5—"C" Value Judgments as Assigned to Trends by 55 School Health Educators (Highest Ten Places)

Rank	Per cent of Total*	Category†	Trend
1	36	GP	Suggesting changes in the basic professional terminology used in health education (11)
2.5	24	SHS	Utilizing parents and other nonschool personnel in administering screening tests, such as those for vision and hearing (47)
2.5	24	HI	Including driver training and driver education in school health and health education programs (91)
4.5	18	SHS	Augmenting the quantity of literature in the field of school and college health education (13)
4.5	18	SHS	Releasing the student during school hours to obtain medical and dental treatment (51)
6	16	HI	Increasing number of acceptable health resources available from commercial organizations (85)
8	13	GP	Attempting to include health learning experiences and concepts in all parts of the school and college curriculum (10)
8	13	GP	Separating health education and physical education for purposes of administration, programing, and professional preparation (16)
8	13	HI	Spotlighting such special content areas as alcohol, tobacco and narcotics, consumer health, and mental hygiene (90)
11	11	GP	Upgrading standards for desirable athletic competition in schools and colleges (37)
11	11	HI	Implementing the concepts of correlation and integration of health with the majority of subjects in the school program (82)
11	11	HI	Increasing number of textbooks published for school and college health courses (86)

* 55 = 100 per cent.
† Category code: See Table 1.
Value judgments: See Table 1.

books published for school and college health courses
(7) Trend 13—Augmenting the quantity of literature in the field of school and college health education
(8) Trend 10—Attempting to include health learning in all parts of the school and college curriculum
(9) Trend 16—Separating health education from physical education for purposes of administration, programing, and professional preparation
(10) Trend 62—Changing the case finding technics for tuberculosis

Analysis of Chi-Square Test Data

Treating the data with the Chi-square test resulted in the determination of the specific trends about which the three educator groups differed in their value judgments. In this study, a Chi-square which had a significant P value at the .05 or .01 level indicated that a difference existed among the three groups of educators in the way in which they rated a trend. The difference in the composition of the score could be traced to certain variables; in this study those variables might be occupational. A Chi-square with a high P value, that is, one above the .05 level of significance, indicated that the educator groups tended to be more homogeneous in their responses and that there was not a statistically significant difference of opinion.

There were 63 trends which carried P values higher than the .05 level, that is, 61 per cent of the total of 104 trends; 41 trends, or 39 per cent of the total, had significant P values.

Table 6—"C" Value Judgments as Assigned to Trends by 25 Public Health Educators (Highest Ten Places)

Rank	Per cent of Total*	Category†	Trend
1	44	GP	Suggesting changes in the basic professional terminology used in health education (11)
2	40	HI	Increasing number of acceptable health resources available from commercial organizations (85)
3.5	32	HI	Including driver training and driver education in school health and health education programs (91)
3.5	32	HI	Increasing number of textbooks published for school and college health courses (86)
5.5	28	GP	Spotlighting the health aspects of physical education (14)
5.5	28	SHS	Changing the case-finding technics for tuberculosis (62)
7	24	GP	Augmenting the quantity of literature in the field of school and college health education (13)
9	20	GP	Attempting to include health learning experiences and concepts in all parts of the school and college curriculum (10)
9	20	GP	Upgrading standards for desirable athletic competition in schools and colleges (37)
9	20	HI	Spotlighting such special content areas as alcohol, tobacco and narcotics, consumer health, and mental hygiene (90)

* 25 = 100 per cent.
† Category code: See Table 1.
Value judgments: See Table 1.

Table 7—"C" Value Judgments as Assigned to Trends by 27 General Educators (Highest Ten Places)

Rank	Per cent of Total*	Category†	Trend
2.5	33	GP	Attempting to include health learning experiences and concepts in all parts of the school and college curriculum (10)
2.5	33	GP	Suggesting changes in the basic professional terminology used in health education (11)
2.5	33	SHS	Releasing the student during school hours to obtain medical and dental treatment (51)
2.5	33	HI	Increasing number of textbooks published for school and college health courses (86)
5.5	26	SHS	Changing the case-finding technics for tuberculosis (62)
5.5	26	CP	Extending the health education requirements for certification of classroom teachers (97)
8.5	22	GP	Augmenting the quantity of literature in the field of school and college health education (13)
8.5	22	SHS	Increasing responsibility taken by boards of education for the administration of school health services (44)
8.5	22	SHS	Utilizing parents and other nonschool personnel in administering screening tests, such as those for vision and hearing (47)
8.5	22	HI	Including driver training and driver education in school health and health education programs (91)

* 27 = 100 per cent.
† Category code: See Table 1.
Value judgments: See Table 1.

When considered by category, the three educator groups indicated the greatest homogeneity concerning the trends in the category, Healthful School Living. The category concerning which of the three groups reflected the greatest statistical difference of opinion was College Health Program.

The three educator groups reflected the highest statistical difference of opinion about 14 of the 104 trends. These were the trends which showed a P value at the .01 level, with four degrees of freedom. The 14 trends are listed consecutively in the following as they appeared in the check list:

Trend 14—Spotlighting the health aspects of physical education

Trend 16—Separating health education and physical education for purposes of administration, programing, and professional preparation

Trend 21—Interpretation of basic medical knowledge and progress to the lay public by qualified experts through such media as radio, television, newspapers and magazines

Trend 29—Establishing interagency committees and health councils at state and local levels

Trend 44—Increasing responsibility taken by boards of education for the administration of school health services

Trend 45—Involving the classroom teacher to a greater degree as part of the health team in the health service program

Trend 56—Developing effective follow-up programs via the team approach in the area of health services

Trend 75—Stressing the emphasis on desirable student behavior and practices as the end product of the health instruction program

Trend 80—Providing and requiring patterns of direct instruction through specific, graded courses carrying academic credit for junior and senior high school students

Trend 88—Growing acceptance of the problem-solving method as an approach to the consideration of health problems

Trend 92—Enlarging and enriching the effectiveness of the basic college required course

Trend 93—Accepting the basic health course as a part of a student's general education, particularly on the college level

Trend 97—Extending the health education requirements for certification of classroom teachers

Trend 99—Emergence of school and college health education as an established curriculum of professional preparation

Recommendations

The trends receiving the highest rankings, which indicated that they were of utmost value and significance and should definitely be furthered, can be considered guide lines to strengthen present programs and direct future programs in school and college health education.

No definite pattern can be traced in comparing the 14 trends reflecting statistical differences of opinion and their presence or omission in the tables of rankings. Three of these 14 trends were deemed major and significant by the school health educators (Trends 75, 92, and 93) and three by the public health educators (Trends 43, 75, and 88). Therefore, it would seem highly desirable that each of the three educator groups be made cognizant of and alerted to these and other differences of opinion indicated by the P values as each group strives to improve and strengthen the role it plays in the school and college health program. These trends should be further analyzed to determine whether the lack of agreement indicated is interfering with multidisciplinary cooperation regarding the school and college health program and with program progress generally.

School and college health educators should assume the initiative to clarify and interpret more adequately the worth of those trends they deemed of utmost significance but which did not appear as valuable or important to their colleagues in public health and general education.

Dr. Beyrer is assistant professor of health education, Department of Physical Education, Ohio State University, Columbus, Ohio.

This paper was presented before the School Health Section of the American Public Health Association at the Eighty-Seventh Annual Meeting, in Atlantic City, N. J., October 21, 1959.

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Journal of Public Health

EDITORIALS

Region, Metropolis and Form of Government: A Problem for Health Leadership

WHEN the Brooklyn Dodgers and New York Giants moved across the Continent to California they unwittingly provided a striking symbol of the virtual flood of migration that has been such a marked feature of American life in recent decades. This movement of people has led not only to dramatic regional changes, but equally to differential growth of cities and their surrounding areas. Our cities have grown rapidly over the past hundred years, but it is in our century that the dramatic evolution from the great city to the metropolitan area has taken place. On the eve of the Civil War, only New York (that is, the present five boroughs) was passing the million mark in population. By the turn of the century, however, New York with its adjoining suburbs contained a population about equal to that of the entire United States a hundred years earlier. But even by 1900, the country had only four metropolitan cities containing more than one million inhabitants, and only 15 others with populations between 250,000 and one million. These metropolitan areas contained 21 per cent of the total population. By 1950, there were no less than 14 metropolitan areas of more than a million inhabitants, another 19 with populations over half a million, and, altogether, 151 such areas with populations of 100,00 or more.[1] By the year 2000, it is forecast, the United States may have 320 million people, and one-third of these will live in ten super-metropolitan areas. Altogether it is estimated that urbanites will make up about 85 per cent of the population.

Clearly, such vast urban growth adds a new dimension to American society, and throws into high relief opportunities as well as problems for the future. There can be no doubt that if these trends continue, urbanism of the metropolitan type will dominate all aspects of American life. In fact, in some respects the future is already here. Journalists and others have turned the "exploding metropolis" into a cliché, and have made us all familiar with the current roster of metropolitan ills: traffic congestion, housing needs, the frictions engendered by shifting populations, the haphazard utilization of land, the wasting of water resources and numerous others. These maladies, however, even though they are the problems that confront us immediately, are in general not the fundamental problems. Rather they are symptoms reflecting an accumulation of lags in the coordination of the various functions of the metropolitan community. These lags are in turn the consequence

of sporadic, uncoordinated, haphazard community growth. The fact is that the metropolitan community just grew like Topsy—or if one wishes to be polite, one can say it evolved over a period of several generations—and we now face the consequences.

Moreover, this growth of the metropolis has occurred along various dimensions, not only vertically and horizontally, but equally in terms of economics, communications, and various services such as water supply, sewage disposal, recreation, and others. For better or worse, midcentury America is organized and operates as a system of metropolitan centers, each located in a specific geographic, economic and social setting. Complicated and diverse ties exist between the metropolis and the region in which it is situated. One of these, the water supply problem, has received a good deal of attention lately and is likely to require even more attention in the future.

These situations can be viewed with alarm or we can see them as opportunities for action. One thing is clear. The developments described above challenge many of the concepts held by public health workers. For example, what will remain of local government and its institutions if the nature of locality is radically altered? And how will this affect the institutions concerned with public health? How about current concepts of the community? Are they valid in this new framework of metropolis and region?

Haphazard growth has meant poor community development and many difficult problems. The metropolitan community of the coming decades will need to be carefully planned within a regional framework so that there may be more efficiently coordinated patterns for such services as transport, water and sewerage utilities, medical care, and others. Here is an opportunity for research and application. The time for professional myopia and the limited vision of local concern is long past. Even the local problems are today seen more realistically when viewed in a perspective which goes beyond the local area to the regional and national level. Responsible leadership in public health at all levels of national and community life must take cognizance of the facts and take action to deal with the impact of urbanism and metropolitan growth. Creative action for humane community life is a major need of our time and the future will judge us for our contribution toward this end.

1. Pickard, Jerome P. Metropolitanization of the United States. Research Monograph 2, Urban Land Institute, Washington, D. C., 1959; Duncan, Otis D., et al. Metropolis and Region, Baltimore, Md.: Johns Hopkins Press, 1960.

A Word of Thanks

In the course of the year the Editor of the Journal has enjoyed the aid and guidance of a considerable group of people, the largest number of whom are members of our Association. Some have assisted in reviewing books, others have prepared guest editorials or suggested topics for such treatment, while still others have reviewed manuscripts and have helped the Editor in arriving at a decision as to their suitability for publication. We are aware that public health workers tend to carry on more than one activity at a time, and time is therefore precious. For this reason we are exceedingly grateful to all those who have so willingly given of their time and knowledge. As we complete another volume of the Journal, we wish you well for the coming year, and we expect to enjoy the cooperation of all those who have helped so far, as well as of others whom we hope to involve in 1961 in making the Journal more than ever the organ of American public health.

THE ALBERT LASKER AWARDS FOR 1960

Nineteen hundred and sixty marks the 15th annual presentation of the Albert Lasker Awards by the American Public Health Association. The Lasker Awards are given by the Albert and Mary Lasker Foundation to individuals and groups for outstanding contributions in research related to diseases which are the main causes of death and disability and for distinguished service in the field of public health administration.

The Awards were conceived not only to honor the recipients and to dramatize their accomplishments, but also to arouse increased professional and public interest in medical research and public health administration and to aid in the rapid dissemination of vital new health information to the peoples of the earth.

Since their founding in 1946 the Albert Lasker Awards of the American Public Health Association have come to be regarded among the nation's primary medical honors. Ten of the recipients have later received Nobel Prizes.

The Award consists of a statuette of the Winged Victory of Samothrace, a beautiful leather-bound, illuminated citation, and a check for $2,500. A stipend of $5,000 accompanies the Special Award.

The Awards for 1960 were presented at the Second General Session of the Association's Annual Meeting in San Francisco, Calif., November 3.

Leona Baumgartner, M.D., commissioner of health, New York City, and chairman of the Awards Committee, was assisted by Malcolm H. Merrill, M.D., director of public health, State Department of Public Health, Berkeley, Calif., and president, APHA, in presenting the citations to the following recipients:

SPECIAL AWARD IN PUBLIC HEALTH

Abel Wolman, Dr.Eng.
The Johns Hopkins University, Baltimore, Md.

Over a period of nearly a half century, **Abel Wolman** has had three distinguished careers: first in public service, second in professional education, and third in statesmanship and world citizenship.

During the 24 years he was on the staff of the Maryland State Department of Health, the last 17 of which he served as chief engineer, he evolved a progressively broadened concept of environmental hygiene and pioneered in programs that sought to exploit new horizons for public health engineering.

While on the staff of The Johns Hopkins University from 1921 to 1959, when he retired as professor of sanitary engineering, he brought to education the unique admixture of the precision of thinking of the engineer, the breadth of view of the ecologist, the curiosity of the intellectual and the humanity of the citizen.

As a leader of both lay and professional health groups, as consultant to great industrial companies and adviser to government bodies in this and other countries, his engineering skill and organizational genius have contributed much toward achieving a healthier environment for many peoples.

Out of the integration of these unique qualities emerged a wisdom that has been recognized and acclaimed by his peers throughout the world and in the exercise of which he has brought honor to the profession of public health.

AWARD IN PUBLIC HEALTH

John B. Grant, M.D.
University of Puerto Rico, San Juan, Puerto Rico

For more than 40 years as a public health leader first in China and India and during the postwar years as an international consultant on medical care, **John Black Grant** has served humanity with distinction and mature understanding.

Born in Ningpo, China, he joined the staff of The Rockefeller Foundation in 1918 and spent almost two decades in the Far East as a key figure in the Peking University Medical College and The Rockefeller Foundation's China program. He recognized early the necessity of raising the standard of living by improvements in agriculture, education, and village administration as a basis for a permanent public health program.

From China Dr. Grant moved to India to serve as director of the All India Institute of Hygiene and Public Health, which today plays a major role throughout the Orient. Later he became interested in the crucial problem of providing better medical care in those countries with progressive systems of conventional medicine, surgery and public health. This led him to his present post as technical consultant to the regionalization project in Puerto Rico.

International statesman of public health, a recognized authority on the problems of preventive medicine and medical care, John Grant has exerted tremendous influence on modern health programs in many parts of this world.

GROUP AWARD IN PUBLIC HEALTH

CRIPPLED CHILDREN'S PROGRAM OF THE CHILDREN'S BUREAU, U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Arthur Lesser, M.D.
Director, Division of Health Services
(accepting award)

The Crippled Children's Program has helped four and one-quarter million children who are handicapped or with conditions which might lead to handicaps. Not only were children helped but millions of other handicapped persons, young and old, have benefited by the extensive services which were set up under its aegis, in and out of hospitals.

This program is unique in that it has stimulated the extension of the highest quality of services, developing new comprehensive ones when and where needed for cardiac cripples, polio victims, amputees, the epileptic, cerebral palsied, congenitally handicapped, those with speech and hearing defects, with nephrosis and other chronic diseases. Each year the demand for these services has increased, with the rate per 10,000 children served doubling in 22 years.

Existing private and public agencies, professional and parent groups have been extensively involved in the program. Despite its meager funds, the Crippled Children's Program has made wide use of the potential strength in each community, and has added thereto the scientific direction and the specialized knowledge necessary to develop better services. Its special project grants have also fostered regional and intrastate services for the very hard-to-care-for group. Training of specialists in short supply has been supported.

This federally supported medical care program, with its emphasis on high quality care, is widely approved by physicians, hospitals and local communities everywhere. An administrative triumph of no mean scope has been achieved.

The future health of the nation's young and old would be greatly enhanced were other tax-supported medical care programs to strive for quality in the same spirit.

CHRONIC DISEASE CONTROL PROGRAM OF THE CALIFORNIA STATE DEPARTMENT OF PUBLIC HEALTH

Lester Breslow, M.D.
Chief, Bureau of Chronic Diseases

This group award is in recognition of a concept, an organization, and a public health physician.

The concept is that the prevention and control of chronic disease should be a matter of public health concern. While this is generally accepted today, it was not so 15 years ago.

The organization is the California State Department of Public Health and its Chronic Disease Control Program. Started in 1946, this program has been steadfastly supported by the department and its leadership role has been great. Proper concern with discovery of the extent and causes of chronic illness soon led to the undertaking of research, and this, in turn, to a broadening of the appreciation and application of available skills and knowledge in disciplines other than those to which we in public health were habituated—such as the behavioral sciences. Thus, the scientific team approach became an important part of this undertaking.

This farsighted activity on the part of the California State Department of Public Health was among the earliest organized programs by an official health agency in this country. However, as with any new group undertaking, it required leadership. So let us turn to the leader—the physician.

When **Dr. Lester Breslow** became the first chief of the newly created Bureau of Chronic Disease Control in California in 1946, he did so with a vision and a purposefulness that were, indeed, unique. For 15 years he has devoted his efforts and abilities almost exclusively to the challenge of the chronic diseases. As statesman, administrator, and inspirer of group research, he ranks high among those who have carried our understanding of etiology, prevalence, and control to levels little thought possible two decades ago. The many studies under his guidance in the fields of multiphasic screening, morbidity survey technics, etiology of chronic illness, and, currently, the ecologic setting in which illness occurs, are all of outstanding importance. He and his program stand among the foremost in this field.

JOINT AWARD IN MEDICAL RESEARCH

M. H. F. Wilkins, Ph.D.
King's College, London, England

F. H. C. Crick, Ph.D.
Cambridge University, Cambridge, England

James D. Watson, Ph.D.
Harvard University, Cambridge, Mass.

Literally scores of investigators—who, as is our custom, are likely to remain largely unsung—have performed many ingenious experiments over the years which have led to widespread recognition of the fact that DNA (desoxyribonucleic acid) is one of the principal elements in the metabolic processes of cells and that it plays a leading role in the transmission of inheritable characteristics. This demonstration of the biological significance of DNA has served to stimulate research directed at determining

the structure of this important molecule. Here, too, many investigators have contributed significantly to "setting the stage" for the conduct of the particular research for which this citation is given.

The painstaking x-ray diffraction studies of **M. H. F. Wilkins** provided a most important clue which was pursued in an ingenious fashion and to a logical conclusion by **F. H. C. Crick** and **J. D. Watson** to the end that the structure of the DNA molecule was revealed. Even though the structure described may be altered subsequently to some extent, it will nevertheless serve as a substantial contribution to a better understanding of the location of specific genetic information and of the means by which replication and mutation of genes may take place.

The research of Wilkins, Crick, and Watson has provided a firm foundation for the many advances in man's fight against the ravages of disease that will surely follow this enlightened discovery.

JOINT AWARD IN MEDICAL RESEARCH

James V. Neel, Ph.D., M.D.
University of Michigan, Ann Arbor, Mich.

L. S. Penrose, M.D., F.R.S
University College, London, England

James V. Neel, Ph.D., M.D. After a brief career in zoology, Dr. Neel entered medical school and completed his training in internal medicine in 1946. Since that time he has risen to a pre-eminent position in the field of human genetics, and, as professor of human genetics and internal medicine at the University of Michigan, he symbolizes the recognition in this country of the great importance of genetics as a branch of medical science.

His work on two important diseases of the blood—thalassemia and sickle cell anemia—demonstrated conclusively that genetic principles are applicable to the study of many major diseases and not just to elucidation of the inheritance of bizarre anatomical or metabolic abnormalities. By the use of simple laboratory tools for recognition of the minor abnormalities exhibited by the carriers of abnormal genes, he was able to prove that the classical disease, sickle cell anemia, was the clinical expression of the abnormal gene in the homozygous offspring of parents, each of whom manifested the sickle cell trait. This fundamental contribution was independently confirmed in the brilliant work of Pauling and his associates upon the chemistry and inheritance of human hemoglobins.

In addition to this and several other important contributions to our knowledge of the operation of genetic mechanisms in human diseases, Dr. Neel's work with the Atomic Bomb Casualty Commission in Japan has made him one of the world's outstanding authorities on the genetic effects of ionizing radiation in man. The continuing observations in Japan, based upon his careful theoretical formulations of the extraordinarily difficult problems involved in drawing valid conclusions from data collected in a large population group, have assured mankind that maximal information for its future guidance in the peaceful development of nuclear energy will be extracted from the horrors of atomic warfare.

L. S. Penrose, M.D., F.R.S. One of the great pioneers of modern human genetics, Professor Penrose has played a major role in laying the foundations for the rapid development of this branch of science during recent years as its general importance to medicine has been recognized.

Beginning 30 years ago with an interest in the heredity of mental disease, he conducted a long series of researches which culminated in a classic publication, "The Biology of Mental Defect," which is not only an extraordinarily comprehensive survey of the etiology of mental deficiency but also an outstanding treatise on human genetics.

Professor Penrose and his associates have been responsible over the years for studies which touch all aspects of human genetics, including genetic analyses of most of the known hereditary diseases, contributions to mathematical genetics, biochemical genetics, the study of gene linkage in man, and theoretical work on the mutagenic effect of ionizing radiations. Most recently their attention has been turned to abnormalities of human chromosomes associated with congenital defects, particularly mongolism.

Throughout this career, Professor Penrose has been a source of inspiration and guidance to many younger workers in his field who have come to the Galton Laboratory at University College for training and who are now pushing forward the frontiers of human genetics in many parts of the world. His work, both as an investigator and as a teacher, represents an important contribution to knowledge in the life sciences; it has brought an increased understanding of the complex interactions between heredity and environment which underlie human disease and has led to the development of conceptual schemes which have stimulated new and fruitful investigations in medicine.

JOINT AWARD IN MEDICAL RESEARCH

Ernst Ruska, Dr.Eng.
Berlin Institute of Technology,
Berlin, West Germany

James Hillier, Ph.D.
RCA Laboratories, Princeton, N. J.

The modern electron microscope has extended the range of human vision to objects several hundred times smaller than those which can be seen with the light microscope. It has revealed structure where none could be seen previously and where little was thought to exist.

This remarkably precise scientific instrument, the potential resolving power of which is still to be fully realized, has produced a broad reawakening of interest in the fine structure of biological material and has demonstrated the existence of order in dimensions which previously were invisible.

For their major contribution to the design, construction, development and perfection of the electron microscope, which led to the creation of an unique and much used research instrument, this joint award is presented to **Dr. Ernst Ruska** and **Dr. James Hillier.**

1960 Is the Golden Anniversary Volume

of the American Journal of Public Health

ASSOCIATION NEWS

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Scientific Exhibits Win Citations at San Francisco Annual Meeting

Certificates of merit were placed on ten of the scientific exhibits shown at the 88th Annual Meeting in San Francisco.

The Committee on Scientific Exhibits, S. S. Lifson, chairman, conducted its annual survey, viewing 74 scientific exhibits. The committee was ably assisted by a group of health educators from state and local health departments, and by a group of students from the University of California School of Public Health at Berkeley.

The cited exhibits were sponsored by:

California State Department of Public Health
Dade County Department of Public Health; University of Miami School of Medicine; Dade County Medical Association
Metropolitan Life Insurance Company
National Heart Institute
National Tuberculosis Association
New York State Health Department
Pan American Health Organization
U. S. Department of Agriculture, Meat Inspection Division
U. S. Public Health Service:
Division of Engineering Services
Division of Hospital and Medical Facilities

Miscellany

A report on several highlights of the 88th Annual Meeting of APHA in San Francisco will appear in the next issue of the Association newsletter "This is the News." Members may expect to receive the newsletter early in January.

The resolutions adopted by the Governing Council in San Francisco will be printed in the January issue of the Journal. The same issue will present a summary of actions taken on all the resolutions submitted to the 1960 Resolutions Committee (showing also the respective Sections, committees, etc., submitting them).

Membership ($12) and Fellowship ($20) dues are payable at this time. The Membership Department is presently processing bills through APHA's new IBM equipment. Since this is the first time such a billing procedure has been employed, some members may anticipate a delay in receiving their bills. They need not, however, delay paying their membership dues; this they can do before they are billed, if they wish.

NEWS OF AFFILIATED SOCIETIES AND BRANCHES

APHA Affiliated Societies and Branches

Society and Secretary

ALABAMA PUBLIC HEALTH ASSOCIATION, Ralph Roberts, State Health Dept., Montgomery
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CALIFORNIA, NORTHERN PUBLIC HEALTH ASSOCIATION, Mrs. Joan Davis, City Health Dept., San Jose
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CUBAN PUBLIC HEALTH SOCIETY, Dr. Raphael Calvo Fonseca, Calle 19 No. 511 Altos Vedado, Havana
FLORIDA PUBLIC HEALTH ASSOCIATION, Everett H. Williams, Jr., P. O. Box 210, Jacksonville
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IOWA PUBLIC HEALTH ASSOCIATION, Lloyd Coe, Iowa Hospital Association, 1012 Liberty Bldg., Des Moines
KANSAS PUBLIC HEALTH ASSOCIATION, W. W. Wilmore, Kansas Tuberculosis and Health Assn., 1134 Topeka Ave., Topeka
KENTUCKY PUBLIC HEALTH ASSOCIATION, Miss Peggy Fisher, 275 E. Main St., Frankfort
LOUISIANA PUBLIC HEALTH ASSOCIATION, A. G. Owens, P. O. Box 1872, Monroe
MARYLAND PUBLIC HEALTH ASSOCIATION, C. Murray Wylie, M.D., 615 North Wolfe St., Baltimore 5, Md.
MASSACHUSETTS PUBLIC HEALTH ASSOCIATION, Mrs. Elizabeth K. Caso, Dept. of Health, Cambridge
MICHIGAN PUBLIC HEALTH ASSOCIATION, Howard Hilton, Washtenaw County Health Dept., County Bldg., Ann Arbor
MINNESOTA PUBLIC HEALTH ASSOCIATION, D. S. Fleming, M.D., State Dept. of Health, University Campus, Minneapolis
MISSISSIPPI PUBLIC HEALTH ASSOCIATION, H. E. Boone, P. O. Box 1700, Jackson
MISSOURI PUBLIC HEALTH ASSOCIATION, Mrs. Nadia Craver, 5th Fl., State Office Bldg., Jefferson City
MONTANA PUBLIC HEALTH ASSOCIATION, Thomas S. Willett, Montana Public Health District 1, Hardin
NEBRASKA PUBLIC HEALTH ASSOCIATION, Mrs. Jack Carey, Lincoln Dairy Council, 620 Sharp Bldg., Lincoln, Neb.
NEVADA PUBLIC HEALTH ASSOCIATION, Mrs. Elaine Walbrook, 101 W. Arroya, Reno
NEW JERSEY PUBLIC HEALTH ASSOCIATION, Waldo McNutt, M.P.H., Delaware River Drive, Frenchtown
NEW MEXICO PUBLIC HEALTH ASSOCIATION, Daniel T. Marley, P. O. Box 8066, Albuquerque
NEW YORK CITY, PUBLIC HEALTH ASSOCIATION OF, Frances Ann McVey, 4317 Robinson St., Flushing 55, N. Y.
NEW YORK STATE PUBLIC HEALTH ASSOCIATION, Carline Millican, Rochester Regional Office, State Health Dept., Rochester
NORTH CAROLINA PUBLIC HEALTH ASSOCIATION, Robert W. Brown, Box 7325, Asheville
NORTH DAKOTA PUBLIC HEALTH ASSOCIATION, Alice H. Peterson, M.D., State Dept. of Health, Bismarck
OHIO PUBLIC HEALTH ASSOCIATION, Mrs. June O'Donnell, 3516 Braddock St., Dayton
OKLAHOMA PUBLIC HEALTH ASSOCIATION, Bill Burk, 3400 North Eastern, Oklahoma City
OREGON PUBLIC HEALTH ASSOCIATION, Muriel David, City Bureau of Health, 203 N.E. 28th Ave., Portland
PENNSYLVANIA PUBLIC HEALTH ASSOCIATION, Emma J. Petach, R.N., 324 N. Second St., Harrisburg
PUERTO RICO PUBLIC HEALTH ASSOCIATION, Mrs. Mae de Acin, Apartado 211, San Juan 2
SOUTH CAROLINA PUBLIC HEALTH ASSOCIATION, Emily Anne Easterling, Richmond County Health Dept., Columbia
SOUTH DAKOTA PUBLIC HEALTH ASSOCIATION, Alice Brady, R.N., State Dept. of Health, Pierre
TENNESSEE PUBLIC HEALTH ASSOCIATION, C. B. Tucker, M.D., State Dept. of Health, 420 Sixth Ave., N., Nashville
TEXAS PUBLIC HEALTH ASSOCIATION, Joseph N. Murphy, Jr., State Dept. of Health, Austin
UTAH PUBLIC HEALTH ASSOCIATION, Katherine Brandon, M.D., P. O. Box 25, Foothill Station, Salt Lake City
VIRGINIA PUBLIC HEALTH ASSOCIATION, Robert M. Parker, 401 Colley Ave., Norfolk 7
WASHINGTON STATE PUBLIC HEALTH ASSOCIATION, Vance McCallister, 1509 Public Safety Bldg., Seattle 4, Wash.
WEST VIRGINIA PUBLIC HEALTH ASSOCIATION, Mrs. Katherine L. Brown, State Dept. of Health, Charleston 5
WISCONSIN ASSOCIATION FOR PUBLIC HEALTH, Paul Weis, RR No. 2, Waunakee
WYOMING PUBLIC HEALTH ASSOCIATION, Lee Holder, P. O. Box 2203, Cheyenne
MIDDLE STATES BRANCH, APHA, Thelma Luther, Dept. of Health, Des Moines, Iowa
SOUTHERN BRANCH, APHA, M. L. McDonald, Dallas Health Museum, Dallas, Tex.
WESTERN BRANCH, APHA, Robert G. Beaumier, 1309 Smith Tower, Seattle, Wash.

Minnesota Invites Middle States

At the 14th annual meeting of the Minnesota Public Health Association (September 29-30 in St. Paul) registrants numbered 530, 102 of whom filed applications for membership. A membership of 889 active members was reported at the business session on September 29. The members also approved the Executive Committee's invitation to the Middle States Branch of the American Public Health Association to hold its 1962 annual meeting in Minnesota. If the invitation is accepted, the Minnesota, North Dakota, and South Dakota Public Health Associations plan to cosponsor the meeting.

Robert K. Anderson, D.V.M., M.P.H., associate professor, Division of Veterinary Bacteriology and Public Health, School of Veterinary Medicine, University of Minnesota, was installed as president. Other officers for 1960-1961 are:

President-Elect—Henry Bauer, Ph.D., director of medical laboratories, and deputy executive officer, Minnesota Department of Health, Minneapolis

Vice-President—Karl R. Lundeberg, M.D., health commissioner, Minneapolis Health Department

Treasurer—Stewart C. Thomson, M.D., M.P.H., professor and assistant director, School of Public Health, University of Minnesota, Minneapolis

Executive Secretary—D. S. Fleming, M.D., director, Division of Disease Prevention and Control, Minnesota Department of Health

Representative to the APHA Governing Council—A. B. Rosenfield, M.D., M.P.H., director, Division of Special Services, Minnesota Department of Health (outgoing president)

The first general session was a symposium on aging. At the second session C. David Loeks, director, Twin Cities Metropolitan Planning Commission, St. Paul, keynoted a panel discussion on "Population, Progress, and Public Health" with a paper on "Population Pressures in the Next Decade." At the luncheon meeting Mario Fischer, M.D., executive officer, St. Louis County Health Department, Duluth, asked "Do we need County Health Departments?" David E. Price, M.D., Dr.P.H., deputy director, National Institutes of Health, presented the fifth Albert Justus Chesley, M.D. Memorial Lecture, "Public Health in 1970," at the banquet.

The second day opened with breakfast meetings for individual professional groups. These were followed by a general session on the relative roles of official and voluntary agencies as they relate to cleft lip and palate problems and to heart disease. This was keynoted by Gaylord W. Anderson, M.D., director, School of Public Health, University of Minnesota. At the luncheon, the Reverend John C. Kaufman, board chairman, West Central Mental Health Clinic, Willmar, discussed the development of the state's community mental health clinics. The final session was devoted to oral polio vaccines, and was chaired by Leonard M. Schuman, M.D., professor of epidemiology, School of Public Health, University of Minnesota.

South Dakota: How to Enact Laws

Delegates to the 1960 Joint Conference on Welfare, Health, and Rehabilitation at Rapid City assumed the guise of legislators. The conference, held this year September 14-16, is sponsored annually by South Dakota's Public Health Association, Social Welfare Conference, and Chapter, National Rehabilitation Association.

The program consisted of a mock legislative session. Nine bills were introduced, sent to committees, passed, and so on, using the same procedures as are used in the state legislature. All were concerned with problems of the aging. And "there was enough foolishness thrown in to make it fun besides," according to the rapporteur.

At the business meeting of the South Dakota Public Health Association, Cecelia Schuck, Ph.D., professor of food and nutrition research, South Dakota State College, Brookings, succeeded Wesley Duiker as president. Other SDPHA officers for 1960-1961 are:

President-Elect—Robert Huffaker, D.V.M.

Vice-President—Harold Tommervik

Secretary-Treasurer—Alice Brady, R.N., South Dakota Health Department, Pierre

Public Health in Orbit: Wisconsin

The Wisconsin Public Health Association took off from Madison on a metaphorical journey into space on June 14 and 15 at its 12th Annual Meeting.

The first general session was preparatory. C. K. Kincaid, M.D., Madison County's health commissioner and WPHA's president, was the Project Engineer on "The Launching Pad." Norman B. Ryder, associate professor of sociology, University of Wisconsin, spoke on the significance of population trends in "Measuring the Target." Robert N. Barr, M.D., executive officer, Minnesota State Department of Health, made "The Count Down to Reality," in a review of the public health problem of today and tomorrow. "Public health for over 100 years has been concerned with the threat of disease and deficiency, a battle in which it has achieved notable success," he said. "Today it must turn its concern from disorder of deficiency to disorder of excess, from hazards of infectious diseases to hazards of excessive nuclear radiation, excessive smoking, excessive pollution of our environment—even excessive eating and drinking."

Looking toward the future, and specifically at fringe areas, Dr. Barr pointed out that "Every metropolitan area (Wisconsin has five) has become a patchwork of the new and the old. Here central core cities and mushrooming suburbs are each faced with peculiar needs. Human needs have set goals in public health and other fields that may well result in a completely new philosophy as to the place of government in our individual and collective lives."

"Take off: Understanding the Nature of Man" was the topic of the second general session. Answers were sought to such questions as: What are the obstacles to acceptance of public health education? What factors are important in evaluating the impact of programs? Edward Wellin, Ph.D., field director, APHA Study of Behavioral Sciences in Public Health, stressed the fact that understanding why people act as they do is a prerequisite to working effectively with them. James F. Crow, Ph.D., chairman, Department of Medical Genetics, University of Wisconsin, briefly reviewed some of the new knowledge of genetics. He noted that mankind's long-term genetic future may be influenced by common chemicals encountered in life, by x-rays, and also by keeping alive some genes that in former years would have been weeded out. John D. Altmeyer, M.D., supervisor, Mental Health Division, Milwaukee Health Department, pointed out that when health workers cannot, for a variety of reasons, guide people to the solution to a problem, they should be mature enough to steer them to someone else who can. Success or failure in health education is frequently dependent on public health workers' unconscious emotional attitudes not only toward people but also toward health and ill-health, he said.

Each of the three concurrent section meetings planned as follow-up to the second session (and called "Signals from Space") presented a public health problem in which the principles of understanding human behavior were crucial to the solution. One section heard the "West Bend Story" told by a panel of citizens who were able to protect the public's interests when the fluoridation issue had been placed on referendum. "The Problems of Family X" served as a basis for discussion of interdisciplinary responsibilities at the second meeting. The third topic was "Sanitation Inspections and Surveys" as seen from the points of view of persons operating businesses.

"Recovery from Outer Space" was attempted at the final session by a panel which included: William Kasakaitas, Wisconsin Farm Bureau, Madison; M. S. Kagan, M.D., State Medical Society, Appleton; Harold Schrubbe, Community Services Director, Community Welfare Council, Milwaukee; and Mrs. R. W. Cutler, president, Visiting Nurse Association, also of Milwaukee. They were the others of "as others see us," the

subtitle of the session. Consolidation of local health departments, they said, is one of the state's most important public health needs. Some other needs: development of more programs for older citizens; improvement in operation of nursing homes, and more extensive use of lay people in the public health program.

At the business meeting WPHA conferred honorary memberships on William D. Stovall, M.D., for 43 years director of the State Laboratory of Hygiene, and on M. Starr Nichols, Ph.D., who from 1949 to 1959 was assistant director of the same laboratory.

The new president of WPHA is G. G. Shields, M.D., district health officer, Wisconsin Rapids. Other officers for 1960-1961 are:

Vice-President—Rosemary Vahldieck, R.N., University of Wisconsin School of Nursing, Madison

Secretary-Treasurer—Paul Weis, Waunakee

The Wisconsin Public Health Council's annual meeting was held on June 13 in conjunction with the WPHA conference. Among the session topics were the development of local health services, the local health officer system, and the health manpower situation in Wisconsin. M. W. Stuessy, M.D., Brodhead, is council president.

Nebraska: Variations on a Theme

Administration, community health, school health, and professional health education were the four parts of the conference theme, "Education for Healthful Living," at the Nebraska Public Health Association's 10th annual meeting (Omaha, September 28-30).

The theme was appropriate, said Violet DuBois, M.P.H., president of NPHA, since "Increasingly, we in public health are coming to realize that education of citizens in our neighborhood, our city, and our state is essential in solving many modern public health problems." She also took stock of NPHA. "On the positive side," the executive committee has been active in upgrading NPHA, the resolutions committee has developed a system whereby NPHA can lend its prestige to needed improvements in health legislation, and voluntary health agencies have given considerable support to NPHA. "On the negative side, there remains a deep-seated feeling of apathy among many members of our organization, an attitude of indifference—a 'what's in it for me' attitude—. No doubt this can be found in many organizations, including others in the field of public health. But, so long as such an attitude is widespread, we can never expect our organization to grow and prosper the way it should."

At the banquet, E. D. Lyman, M.D., director, Omaha-Douglas County Health Department, Omaha, received the annual individual award for "excellence in leadership" as an "imaginative director of the public health program in Omaha." The organization award went to the Home Extension Clubs of Nebraska; Mrs. Keith Lessert, Merriman, president of the Council of Home Extension Clubs in Nebraska accepted the plaque.

At the business meeting the members voted to increase the membership dues from $2 to $5 a year. The new officers for 1960-1961 are:

President—E. A. Rogers, M.D., M.P.H., director of health, Nebraska Department of Health, Lincoln

President-Elect—Lester M. Jensen, director of health education, Lincoln-Lancaster County Health Department, Lincoln

Vice-President—Mrs. A. L. Rousey, Fremont

Secretary—Mrs. Jack Carey, executive director, Lincoln Dairy Council, Lincoln

Treasurer—H. E. McConnell, M.P.H., director of laboratories, Nebraska Department of Health, Lincoln

Representative to the APHA Governing Council—Harle V. Barrett, M.D., M.P.H., director, Department of Preventive Medicine, Creighton University College of Medicine, Omaha

Nevada Public Health Association

The most recent addition to the roster of state public health associations is Nevada's, which held its first business meeting in September at Sparks and heard its first scientific paper. This was presented by Edward L. Russell, M.D., president of the Western Branch—APHA, who spoke on the obligations of professional public health associations.

The following officers were elected for 1960-1961:

President—Daniel J. Hurley, M.D., state health officer, Nevada State Department of Health, Carson City

President-Elect—D. D. Carr, M.D., M.P.H., health officer, Clark County Health Department, Las Vegas. (Also appointed to the Western Branch Regional Board.)

Vice-President—Robert Bull

Secretary—Mrs. Elaine Walbroek, executive director, Nevada TB & Health Association, Reno

Treasurer—George Roan

The Nevada association will hold its next annual meeting in the early fall of 1961 at Las Vegas.

(Editor's note: This report was prepared for the "News from the Field" section of the Journal. As the December issue goes to press, however, the report is transferred to these columns, news having been just received that the APHA Governing Council approved the NPHA's and the Wyoming Public Health Association's applications for affiliation at the 88th Annual Meeting of APHA in San Francisco. Dr. Hurley, NPHA president, is the Association's delegate to the APHA Governing Council. News of the Wyoming affiliate will be reported in a later issue of the Journal.)

APHA membership application blank on page XXIX

Journals Wanted

If there are any readers who have no further need for their February or March, 1960, Journals, the Association would be grateful if members would mail them to the Association at 1790 Broadway, New York 19, N. Y. Issues of January and February, 1959, are also much needed.

EMPLOYMENT SERVICE

The following pages present information for those seeking public health personnel and for those seeking positions in public health. Other information concerning vacancies and personnel available is on file in the Association office. Anyone wishing to have the benefit of this additional information can obtain it by writing to the Vocational Counseling and Placement Service of the Association.

Advertising space in these pages is available at special rates for the use of employers or individuals. The charges are $5 for the first 50 words or fraction thereof and $1 for each additional 10 words or fraction thereof. There is no charge to members or Fellows of the Association who desire to utilize the **Positions Wanted** portion of these pages. **Closing date** for receipt of advertisements is the first of the month preceding the desired month of publication. **All correspondence should be sent to the American Public Health Association, 1790 Broadway, New York 19, N. Y.**

POSITIONS AVAILABLE

A challenging opportunity for medical work in Burma. A **Young General Practitioner or Surgeon** is urgently needed to assist the founder and chief of a 250-bed hospital in northern Burma, Dr. Gordon S. Seagrave. He must be an American and be willing to accept an appointment for at least two years. It could be lifetime work if the candidate were so inclined and if life in Burma proved rewarding to him. A married man is preferred, but this is not essential. However, if the doctor were married, and to a trained nurse, there would be an important place for her in the nurses' training program. Or if she were a schoolteacher, an opportunity to teach in the secondary school on the hospital compound is available. Modest salaries, travel expenses, and a western style house will be provided the doctor and his family. Write **Box PH-11,** Employment Service, APHA.

Public Health Physician—to act as chief, Division of Preventive Medicine, in San Diego County Public Health Department. Broad administrative experience with a recognized local health department required. Annual salary $14,616-$16,116, plus 10 per cent if certified by the American Board of Preventive Medicine and Public Health. Write County Civil Service, Room 403, Civic Center, San Diego 1, Calif.

Health Officer—for Mesa County Health Department. Starting salary $12,000 per year. This is an established health unit with headquarters in Grand Junction, Colo. Please contact Dalton Roberts, Administrative Officer, Colorado State Department of Public Health, 4210 East 11th Ave., Denver, Colo.

Psychiatrist—to act as director of the Community Mental Health Services program. Starting salary up to $1,244 per month depending upon qualifications of applicant. Contact Dalton Roberts, Administrative Officer, Colorado State Department of Public Health, 4210 East 11th Ave., Denver, Colo.

Public Health Officer—eligible for American Board certification, to head well established department, Jefferson County, foothills of Rockies and part of Denver metropolitan area. Ideal location, rapidly growing county, progressive government. Population 127,000; 1960 budget $184,800; 1961 proposed budget $231,500. New building to be completed in 1961. Starting salary $12,876, with average annual increments $650. Starting date July 1, 1961. Write Director, Jefferson County Health Department, Court House, Golden, Colo.

Physician—to serve with Department of Health clinical team working with children having a variety of crippling conditions. Will have professional and administrative responsibility for operation of specified fields of crippled children services. Requires completion of general internship in an approved hospital and not less than two years' employment in pediatrics or completion of two-year internship in pediatrics and M.P.H. Also eligibility for license to practice medicine and surgery in Connecticut. Merit system, sick leave, annual vacation. Reply to B. Dearington, State Department of Health, State Office Bldg., Hartford, Conn.

Health Director—Minimum qualifications: M.D. with training and experience in public health. Salary $12,000-$14,000 per year. Apply Personnel Director, Old City Hall, 126 South First St., Rockford, Ill.

Public Health Director—for Public Health Department in Portland, Maine, community of 80,000 and center of metropolitan area of about 150,000. Department staff of 37 engaged in progressive public health program, including active housing inspection and enforcement of minimum housing standards and environmental sanitation. Council-manager form of government since 1923. Health department enjoys excellent relationships with private and voluntary agencies, and a real civic interest in public health

matters exists. Health department budget for 1960 totals $160,000. Portland offers an unparalleled opportunity for constructive professional work and for pleasant living. Degree in medicine required. Degree in public health or willingness to obtain graduate training in the field is desired. Salary open. Write Julian H. Orr, City Manager, City Hall, Portland, Maine.

Director—for progressive and well established County Health Department serving a rich agricultural-industrial area in southeastern Michigan; population 76,000. Eligibility for Michigan licensure, training and experience in public health required. Address: Lenawee County Health Department, 113 West Front St., Adrian, Mich.

Health Commissioner—County unit, serving 100,000, Hudson River Valley, with headquarters at Kingston, N. Y. This is an established unit with a well trained staff of 50. Experience and training for health officer required. Salary $14,000, plus necessary travel. For details write to Mr. Harry Kaplan, President, Ulster County Board of Health, 15 Main St., Kingston, N. Y.

Health Director—for Cabarrus County Health Department, Concord, North Carolina. Located 20 miles from Charlotte. Excellent program operating. Budget $124,000. North Carolina license required. Salary dependent on merit system qualifications. For further information write C. A. Furr, Chairman, Box 867, Concord, N. C.

Pediatrician—for State Health Department. To act as pediatric consultant within the agency and work with professional and lay groups in the field. Included in work: hospital standards, school health problems, statistical studies, future program planning. Starting salary $12,240. Ohio medical license, one-year internship, at least two years' graduate training required; preferably Board of Pediatrics or eligible. Civil service position, vacation, sick leave, annual salary increments, and retirement plan. Staff appointment to state university if eligible. Address inquiries to Division of Child Hygiene, Ohio Department of Health, Columbus 15, Ohio.

Health Officer—Starting salary $12,600-$15,000 depending on qualifications. Jackson County, Medford, Ore., in the heart of the beautiful Rogue River Valley, about equal distance from Portland and San Francisco. M.D. and M.P.H. degrees, plus some public health administrative experience. Ability to secure medical licensure in Oregon under the merit system. Apply to Mr. A. T. Johnson, Personnel Director, Oregon State Board of Health, P. O. Box 231, Portland 7, Ore.

Outstanding career opportunity with the City of Los Angeles

DISTRICT HEALTH OFFICER

$997-$1,236 a month

Must be duly licensed to practice medicine in the state of California.

One year of responsible public health medical experience in a public health agency required.

Master's degree in public health desirable.

Write immediately to:

George M. Uhl, M.D., Health Officer
Los Angeles City Health Department
111 East First Street
Los Angeles 12, Calif.

Director—for the South Plains Health Department. Headquarters in Brownfield, Tex. Salary $14,000 per annum, plus $2,400 travel expense per annum. Must meet the requirements of the Texas State Department of Health. For more information write Judge Charles Lawrence, Box 847, Seminole, Tex.

District Health Officer—for Grays Harbor County, Wash. Salary range $12,456-$14,868. M.D., M.P.H., and two years' public health experience or residency training, or three years' general medical experience. Eligibility for state license required. Inquire: Personnel Officer, State Health Department, Smith Tower, Seattle 4, Wash.

District Health Officer—Public health administrator of a district area; district epidemiologist. Plan, organize, supervise work of professional staff consisting of engineers, nurses, sanitarians, nutritionists, dental hygienists, health educators, and social workers. Requires M.D. and M.P.H. degrees and license to practice medicine in Wisconsin. Salary: beginning level $12,048-$15,048 per year based upon number of years of residency training and certification by the American

Board of Preventive Medicine. Maximum salary $16,848 per year. Civil service, vacation, sick leave, Social Security, retirement, group health and life insurance benefits, travel allowance. For applications and further information write R. J. Siesen, Personnel Officer, State Board of Health, State Office Bldg., Madison 2, Wis.

Director, Local Health Services—Work with district health officers and professional staff in improvement of local health services. Act as liaison between district and central office staff. Requires M.D. and M.P.H. degrees, two years' residency, certification by the American Board of Preventive Medicine, and license to practice medicine in Wisconsin. Beginning salary $16,248 per year; maximum salary $18,048 per year. Civil service, vacation, sick leave, Social Security, retirement, group health and life insurance benefits, travel allowance. For applications and further information write R. J. Siesen, Personnel Officer, State Board of Health, State Office Bldg., Madison 2, Wis.

Director, Bureau of Maternal and Child Health—Plans and directs a state-wide program for the conservation and improvement of maternal and child health; coordinates and supervises the activities of the bureau. Major activities include the child guidance, school health, and nutrition programs. Requires M.D. and M.P.H. degrees, certification by the American Board of Preventive Medicine or Pediatrics, preferably the latter, and license to practice medicine in Wisconsin. Beginning salary $18,648 per year; maximum salary $20,448 per year. Civil service, vacation, sick leave, Social Security, retirement, group health and life insurance benefits, travel allowance. For applications and further information write R. J. Siesen, Personnel Officer, State Board of Health, State Office Bldg., Madison 2, Wis.

Veterinary Inspector—Licensed graduate of an accredited veterinary college. Important benefits offered in addition to excellent opportunities for advancement. Salary $6,863 with experience in field of public health. Address communications to Cincinnati Health Department, Division of Meat and Dairy Inspection, City Hall, Cincinnati 2, Ohio.

Consultant Nurse—to participate in planning and conducting inservice education programs for nursing homes on a state-wide basis. Bachelor's degree in nursing; some experience in hospital or public health nursing. Salary $4,320-$5,520, plus liberal mileage and per diem allowance. Civil service, vacation, sick leave, Social Security, retirement benefits, group insurance. Write Personnel Officer, State Health Department, State Office Bldg., Montgomery 4, Ala.

Public Health Nurses—Work and play in growing Arizona. Openings in state and county public health departments. Salaries start from $355-$581 depending on qualifications. Civil service, vacation, sick leave, retirement benefits. Write Arizona Merit System, Capitol Bldg., Phoenix, Ariz.

Public Health Nurse—Immediate openings in generalized health program in beautiful, smog-free Fresno. Metropolitan hub of San Joaquin Valley. Close to three national parks, two colleges, and other cultural advantages. Salary $4,836-$6,036. Requires California registered nurse license and California public health nurse certificate. Appointments will be made pending issuance of aforementioned license and certificate. Civil service positions, but examination not required. Apply immediately to Fresno County Civil Service Office, Room 101, Hall of Records, Fresno 21, Calif.

Supervising Public Health Nurse—Position requires college graduation and one year of postgraduate study in nursing and three years' supervisory public health nursing experience. Salary $6,060-$7,584. Apply San Mateo County Civil Service Commission, Court House, Redwood City, Calif.

California's choicest area needs **Supervising Public Health Nurses**—The city of San Jose invites your application if you have an M.S. degree in public health nursing and two years' experience in public health nursing. Age 21-50. Salary $517-$646. Excellent working conditions and benefits. Generalized public health program, including school nursing. Write Personnel Director, Civil Service Department, City Hall, San Jose, Calif.

Public Health Nurse—Challenging position in a Detroit suburb of 115,000 for one with experience and training in public health nursing. Salary $4,936-$5,674 per year. Application and bulletin available from Personnel Department, City Hall, Dearborn, Mich.

Public Health Nurses—for generalized public health nursing in the New Mexico Department of Public Health. Opportunities for advancement, retirement plan, and other fringe benefits. Write Merit System Director, 136 W. Palace, Santa Fe, N. M.

Public Health Nursing Supervisor—Voluntary agency offering programs of comprehensive nursing care of the sick, rehabilitation, maternity and health guidance. Responsibilities and salary ($5,500-$6,575) dependent on past experience. Requires master's degree from program providing advanced preparation in supervision and administration. Good personnel policies. Community with varied cultural opportunities. Write Dorothy Rusby, Director, Visiting Nurse Association, 3300 Chester Ave., Cleveland 14, Ohio.

Consultant-Public Health Nurse—A creative, imaginative person with a master's degree and progressive public health nursing experience is being sought by the Division of Public Health Nursing, Public Health Services of Philadelphia, to work in a newly created position to help develop a broad program for the school-age child. The salary offered is $6,717-$7,357, with generous fringe benefits. For details write to Madelyn N. Hall, Director, Division of Public Health Nursing, Department of Public Health, 500 South Broad St., 2nd Floor, Philadelphia 46, Pa.

Public Health Nurse Superintendent—Responsible for the planning and execution of policies and procedures of a comprehensive public health nursing program. Must possess a degree in nursing from an accredited college, and a master's degree in public health. Annual salary $7,056. Attractive fringe benefits. Apply Room 203, City Hall Annex, Norfolk, Va.

Public Health Nurse III (District Advisory Nurse)—Give guidance and counseling to all public health nurses in a multiple-county area regarding community organization and relationships, program planning, public health nursing technics, records, and reporting. Responsible for inservice education program for local public health nurses and evaluation of nursing services. Salary range $5,700-$6,780, plus travel allowance. B.S. degree with major in public health nursing and three years' generalized experience as a public health nurse. Special requirement: registration or eligibility therefor as a registered nurse in Wisconsin; certification or eligibility for certification as a public health nurse in Wisconsin. Write Miss Ione M. Rowley, Director, Public Health Nursing, 119 Monona Ave., Madison 3, Wis.

Program Consultant—Health education organization. To coordinate work of national network of units engaged in community nutrition education programs. B.S., foods-nutrition major basic requirement, with graduate work in nutrition, or M.P.H. Experience could be extension, teaching, commercial, public health, or dietetics background. Much public contact, with limited travel from Chicago base. Provision is made to attend professional meetings as NDC representative. Salary dependent upon experience and education. Write Mrs. J. Brand, Director of Personnel, National Dairy Council, 111 North Canal St., Chicago 6, Ill.

Health Educator—Opportunity in sunny Miami with the Dade County Health Department. Requirements are a master's degree and three years' experience. Salary $5,040-$6,300; liberal fringe benefits. Apply: Miles T. Dean, Personnel Officer, State Board of Health, P. O. Box 210, Jacksonville 1, Fla.

Public Health Education Consultant—to work with staffs of state and local health departments in developing plans for health education in special areas such as mental health and accident prevention. Master's degree in public health education necessary, as well as successful experience. Entrance salary $5,592, with advances to $8,088. Write H. M. Chester, Director of Personnel Services, Georgia Department of Public Health, 47 Trinity Ave., Atlanta 3, Ga.

South Pacific Commission: Appointment of **Health Education Officer**—Applications are invited for the position of a second health education officer. The appointee will work under the direction of the executive officer for health, and will assist the Commission's principal health education officer as a consultant to the governments of territories within the South Pacific area, organizing practical field demonstrations, training courses, and the preparation of health education material. Applicants should possess, in addition to a university degree or equivalent, a postgraduate qualification in health education. A working knowledge of the French language and previous experience in health education will be an advantage. The successful applicant will be stationed in Noumea, but will be expected to travel extensively in the Pacific involving long periods away from home; and working in a relatively independent capacity. Salary: £ Stg. 2,362.10.0 in the scale; £2,362.10.0—x£125—£2,887.10.0, tax free, plus certain allowances. Appointment is by contract. Housing with heavy furniture is provided at a rental based on salary. Further details may be obtained from the Secretary-General, South Pacific Commission, Post Box No. 9, Noumea, New Caledonia, to whom applications should be sent, together with three recent references and the names of three referees, not later than March 31, 1961.

Public Health Educator — Creative, pioneering opportunity for mature, experienced health educator to initiate and develop a health education program within organized labor in Massachusetts. This project is financed and supervised by the Medical Foundation, Inc., in Boston, Mass., in cooperation with the Massachusetts State Labor Council, AFL-CIO. The project will be carried on for a minimum of three years with excellent likelihood of continued association with the Foundation at the close of the project. Salary open. Social Security, retirement benefits, vacation, travel. Desirable qualifications: Master's degree from an approved school of public health with specialization in health education. Experience required. Write Harold W. Demone, Jr., Executive Director, The Medical Foundation, Inc., 227 Commonwealth Ave., Boston 16, Mass.

Public Health Educator III—Initiate and develop community interest and cooperation in the organization of state-sponsored local programs for rehabilitation of the aged. Assist in development of rehabilitation training institutes on state and local levels. Prepare audiovisual materials relating to aging and rehabilitation. Will be responsible for development of reference and information library. Desirable qualifications: M.P.H. or master's degree in education or related field, plus two years' experience, preferably related to position. Salary starts at $6,060; maximum $7,200. Travel allowance, vacation, sick leave, retirement, group insurance plans. Write R. J. Siesen, Personnel Officer, State Board of Health, Madison 2, Wis.

Public Health Educator III (Dental Hygienist)—Assist in developing dental health programs for preschool and adult groups in a several county area. Coordinate dental health education activities with overall health education program. College graduation, a year of graduate training in an accredited school of public health, and two years' experience. Licensure or eligibility for licensure to practice dental hygiene in Wisconsin essential. Salary starts at $6,060; maximum $7,200. Civil service, vacation, sick leave, Social Security, and retirement benefits. Write R. J. Siesen, Personnel Officer, State Board of Health, 400 State Office Bldg., Madison 2, Wis.

Director of Environmental Sanitation—Salary $677-$842 per month. Orange County, Calif., is recruiting for a director of environmental sanitation to head a professional staff of 28. This is a challenging position with a progressive department of one of the fastest growing counties in the United States. Position requires California registration as a sanitarian, college graduation with major in sanitation, sanitary science, sanitary engineering or some other scientific field, and five years' experience in sanitation, including two years of supervision and three years with a public health agency. Graduate study in sanitary science or public health may be substituted for nonsupervisory experience on a year-for-year basis up to two years. Master's degree in these fields may substitute for two years' nonsupervisory experience. Last date for filing January 1, 1961. Apply: Orange County Personnel Department, 801-C North Broadway, Santa Ana, Calif.

Director of Environmental Health—to assume administrative supervision of total program in sanitation. Five-year old County Health Department in county which has grown 125 per cent since 1950. Growth creates great challenge. Salary $9,923-$12,675; ten cents per mile travel; retirement, Social Security, free health insurance, generous vacation and sick leave. Eligibility for Pennsylvania licensure plus seven years' experience, or M.P.H. or M.S. in sanitary engineering and five years' experience. Apply: William J. Meyer, M.D., Director, Bucks County Department of Health, 50 North Main St., Doylestown, Pa.

Public Health Sanitarian—eligible for registration. Beautiful mountainous area; good schools and junior college. Abundant recreational opportunities. Salary range $400-$455 per month. Write Arthur L. Warner, M.D., M.P.H., Director, San Juan Basin Health Unit, P. O. Box 140, Durango, Colo.

Chief Industrial Hygiene Engineer—Minimum of five years' experience in public health engineering. Master's degree with major course work in industrial hygiene or sanitary engineering. Present salary range $625-$775; civil service proposed salary to become effective July 1, 1961, $715-$880. Social Security and state retirement coverage. Write to Mr. A. T. Johnson, Personnel Director, Oregon State Board of Health, P. O. Box 231, Portland, Ore.

Research Associate in Health Economics Field—Unusually fine opportunity now available for a man with a background in the socioeconomics of medical care involving the employed population. Conduct research and develop material on nonoccupational medical problems of industrial workers. A knowledge of labor and management problems helpful. Familiarity with professional and community medical associations desirable. Some travel involved. Please send résumé stating salary desired. All held confidential. D. W. Grant, American Medical Association, 535 North Dearborn St., Chicago 10, Ill.

Alcoholism Program Director—Challenging opportunity to develop and head up a new state alcoholism program centered around education and research pertaining to the causes, detection, and treatment of alcoholism and rehabilitation of alcoholics. Desirable qualifications: college graduate with a background in social work and a minimum of three years' experience in a state or local alcoholism program. Administrative experience is a must. An M.P.H. would be desirable. Salary starts at $9,420; maximum $11,280. Civil service, vacation, sick leave. Travel with expenses paid. Write to Frederick H. Wentworth, M.D., Assistant Director, Ohio Department of Health, Room 306, Ohio Departments Bldg., Columbus 15, Ohio.

Senior Psychiatric Social Work Consultant—for Colorado State Department of Public Health. Starting salary $598 per month. Headquarters Pueblo, Colo. Contact Dalton Roberts, Administrative Officer, Colorado State Department of Public Health, 4210 East 11th Ave., Denver, Colo.

Medical Social Work Consultant III—for programs in tuberculosis and chronic disease. Salary range $6,389.28-$8,164.08. Minimum requirements: Full graduate training with emphasis on medical or psychiatric social work and two years' experience in the social work program of a hospital or other health facility. All Michigan civil service job benefits. Apply Frank B. Krupiarz, Personnel Officer, Michigan Department of Health, Lansing 4, Mich.

Dental Hygienist—for dental health education program in Fargo and eastern North Dakota. Under supervision of State Health Department. Advanced training desirable but not required. Salary open and dependent on applicant's training and experience. For additional information write Dental Division, North Dakota State Department of Health, Bismarck, N. D.

POSITIONS WANTED

On Box Numbers, Address APHA at 1790 Broadway, New York 19, N. Y.

Health Education, Community Organization, or School Health—Responsible, challenging administrative position desired. M.P.H., University of Michigan; broad experience in public health nursing and health education; wide professional contacts; skilled in writing and layout. Prefer New Jersey or New York areas. Free to travel. **Box HE-97**, Employment Service, APHA.

Commercial Advertisements

All communications on the following commercial advertisements should be sent to Burneice Larson, Medical Bureau, Suite 605, 900 North Michigan Avenue, Chicago 11, Ill.

OPPORTUNITIES AVAILABLE

(a) Medical director, exceptional opportunity head department, leading company research division, to $20,000; Middle West. (b) M.D., direct, consult, district health staff and community organizations; travel throughout state, Great Lakes, to $18,000. (c) M.D. preventive medicine, direct community health services, general program; Pacific Northwest, $15,000. (d) Plant physician, young M.D. join medical staff renowned utility company, $15,000, relocation expenses, East. (e) Nurse, associate professor P.H., also chairman department university school of nurses; $745 per month; West Coast. (f) Director, VNA near New York City; five-day week; $6,000 up. (g) Assistant supervisor for university public health program; also travel throughout state; to $7,000 plus expense account, Middle West.

POSITIONS WANTED

(1) Medical director, public health commissioner, background research in preventive medicine, aviation medicine, 35 years old; 10 years' experience industry as head of medical department. (2) Public health nurse administrator, M.P.H., 12 years director, VNA.

BOOK REVIEWS

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.

HISTOPLASMOSIS — Edited by Henry C. Sweany. Springfield, Ill.: Thomas (301-327 East Lawrence Ave.), 1960. 538 pp. Price, $14.50.

After it was demonstrated in 1945 that infection with H. capsulatum was common in some sections of this country, a period of intensive research on various aspects of histoplasmosis began. In 15 years unprecedentedly rapid strides were made in developing the knowledge of a disease which only a few years before had been a medical curiosity.

The volume here reviewed is a comprehensive presentation of the subject by a group of contributors who include many of the outstanding workers in the field. Established facts are clearly stated, gaps in knowledge are indicated, and theories are advanced concerning empirical observations for which factual explanations are currently lacking. It all adds up to a very impressive volume that is liberally supplied with many magnificient illustrations.

Good as the book is, it could be substantially improved by better editing. There is a good deal of repetition. Here and there the syntax is unbelievably bad. Many references are cited repeatedly, and appear in the bibliographies at the end of each chapter again and again. Economy of space could have been effected by having a single bibliography at the end of the book. There is also a lack of uniformity in the way references are listed. Sometimes they are in alphabetical order, then again they are arranged in the order of presentation. The generic name of the causative fungus is sometimes italicized, sometimes not. A few of the contributors use the terms "incidence" and "prevalence" as though they were synonyms, which makes for confusion. Occasionally, epidemiologic data are presented as significant, when by statistical tests they prove not to be. These are possibly minor criticisms, but perhaps they will lead to correction in subsequent editions.

This book should be of considerable interest and use to mycologists, pathologists, clinicians, roentgenologists, epidemiologists, health officers, and medical students, whether they are in the so-called endemic histoplasmosis area or not. It has been shown that the disease may occur practically anywhere, and medical workers need to be alerted to its possible presence.

L. D. ZEIDBERG

THE CENTRAL NERVOUS SYSTEM AND BEHAVIOR: SELECTED TRANSLATIONS FROM THE RUSSIAN MEDICAL LITERATURE—Collected for the Participants of the Third Macy Conference of the Central Nervous System and Behavior. Held Under the Joint Sponsorship of the Josiah Macy Jr. Foundation and the National Science Foundation. Bethesda, Md.: National Institutes of Health, 1959. 1051 pp. Free limited distribution.

It is extremely difficult in a short review to accomplish more than a brief survey of the range of topics covered in this translation of papers from Russian journals concerned with neurology and the behavioral sciences. No attempt will be made to discuss the papers in neurology because they are outside the special competences of this reviewer. A number of papers present data from experimental investigations of conditioning processes in a variety of different

contexts. This emphasis upon conditioning in learning theory is potent evidence of the continuing influence of a Pavlovian orientation upon much of Russian investigation in the field of experimental psychology. There is also some indication in a few papers that the constructs from cybernetics and information theory have gained acceptance and are being fruitfully utilized in conceptualizing some important problems in the field of neurology. Finally, a paper by A. R. Luria and O. R. Vinogradova entitled "An Objective Investigation of the Dynamics of Semantic Systems" is a highly original contribution combining conditioning principles and linguistics. Its findings extend those of Sir Henry Head and Kurt Goldstein in the area of impairment of symbolization associated with organic brain damage.

As indicated earlier another reviewer with an extensive background in neurology could have extended the discussion of the type of problems investigated clinically and experimentally in an area which has always occupied a position of importance in Soviet medicine. This point has been repeated because a considerable proportion of the papers are concerned with highly specialized problems in neurology.

CHARLES E. ORBACH

CARDIOVASCULAR DISEASE NURSING—Edited by C. B. Mattingly. Washington, D. C.: Catholic University of America Press (620 Michigan Ave., N.E.), 1960. 264 pp. Price, $3.50.

The foreword of the proceedings of this workshop on cardiovascular disease nursing states that its purpose was "to broaden and intensify understanding of nursing responsibility to patients with cardiovascular disease through knowledge contributed by specialists in cardiology, research, rehabilitation, and nursing, and through seminar discussion of problems related to patient care as these are encountered by nurses functioning in hospitals, in schools of nursing, and in community nursing services."

The text is divided into two parts: a collection of papers by authorities in medicine and nursing; and a summary of the seminars. The papers "Comprehensive Approach to Heart Disease in Children," "Modern Management of Arteriosclerotic Heart Disease," and "Modern Medical Management of Cerebral Vascular Disease" are noteworthy for being comprehensive, factual, and systematically presented. "Current Views in Rehabilitation of the Cardiac" is especially commendable for its bold, and yet realistic, approach through research. In "The Nurse Administrator Considers a Priority for Service" and "Nursing in the Intensive Care Unit" are practical suggestions for the nurse with specialized responsibility in cardiac surgery. Several of the papers have thought-provoking content but make only passing reference to the cardiovascular theme. No visual illustrations from the presentations are included. In the seminars, nursing practice, clinical instruction, and staff development were considered, but the summaries are of primary value to the discussants.

The volume will be a useful reference for clinical instructors and supervisors if acknowledgment is made that a workshop creates an atmosphere for its participants that cannot be recreated for the reader of its proceedings.

EDITH V. OLSON

CARE OF CHILDREN IN HOSPITALS—Committee on Hospital Care, American Academy of Pediatrics. Evanston, Ill.: The Academy (1801 Hinman Ave.), 1960. 96 pp. Price, $1.50.

The Committee on Hospital Care of the American Academy of Pediatrics is to be congratulated for the preparation of this manual, which fills a gap and covers the important aspects of care of children in hospitals. Its chief con-

cern is the improvement of quality of care provided to children. The book is simply written and will serve as an invaluable guide to hospital administrators, directors, and staff of pediatric services and ancillary personnel.

Its contents include the general hospital's responsibility for child care, plans for physical facilities, plans for the pediatric unit. It discusses needed facilities for acute and chronic illnesses, communicable disease technics, child feeding, laboratory services, and so forth. Education and training of staff, medical nursing and technical are also dealt with very adequately.

The chapters on meeting the emotional needs of the hospitalized child and meeting the needs of the hospitalized adolescent are timely, up to date, and add considerably to the value of this book. The appendix, including the forms and records, are also valuable additions.

No hospital administrator or director of pediatrics or public health officer can afford to be without this manual. It will prove of value to administrators of existing services as well as those who plan reconstruction or new construction of pediatric hospital services.

The value of the manual, however, would have been greatly enhanced if it also included a more extensive discussion of outpatient department pediatric facilities and needs.

HAROLD JACOBZINER

RELEASE FROM SEXUAL TENSIONS — By Mary Steichen Calderone. New York, N. Y.: Random House (457 Madison Ave.), 1960. 238 pp. Price, $4.95.

This is a mature book by an experienced author, covering wider grounds than the title indicates. Written in the "I" and "You" style, it ranges from "early sex education and experience" via the many facets of married life to "divorced or widowed." It is an easy-to-read book, but, unfortunately, has no index and no illustrations which surely would be helpful in chapters like "The Physical Aspects of Sex Tensions."

Being her father's daughter, the author's simile comes often from the visual arts, such as her advice, "re-edit the memory film of your early sex experience." The author's personal credo —sex is not sin, sex is good—is the leitmotiv. She stresses that there is "an ignorance not only of facts but of feelings in many marriages." This is true especially regarding frigidity, and she doubts that there is such a thing.

The main body of the book deals with the understanding of the causes of sexual tensions and how to release and relieve them, covering subjects from shame and guilt to hate and hostility where sex is used as a weapon. Contraceptive methods are described, their use being taken more or less for granted as, in the author's words, "sex has no business being a problem in the area of religion"—a statement wide open for discussion.

There is not the standard reference for consultation by psychologists and psychiatrists, but the readers are called on for self-assessment and talking things over, not to give up too early, and to remind themselves that love is more than sex. The book is preventive medicine by the written word at its best. We predict a paper-bound edition soon.

BRUNO GEBHARD

NEWER VIRUS DISEASES. CLINICAL DIFFERENTIATION OF ACUTE RESPIRATORY INFECTIONS — By John M. Adams. New York, N. Y.: Macmillan (60 Fifth Ave.), 1960. 292 pp. Price, $5.75.

First-rate monographs are always welcome and useful, and Dr. Adams' book is first-rate and will be both welcome and useful. It is a small book that demanded discriminating choice of references and subject matter. It is something of a hybrid, since the author's special interest is respiratory infections,

but he was required to review the more recent knowledge of virus diseases in order to give a comprehensive account of the respiratory infections. The book necessarily became both a brief summary of the newer virus diseases and a treatise on acute respiratory infections. Indeed, Dr. Adams has included brief chapters on bacterial and fungus infections as well.

His thesis is that the disability and misery caused by the "common cold" constitutes a very important medical problem, and because a great variety of viruses are responsible, the physician is challenged to sort out these etiologic entities and make more precise diagnoses. At present this may only be done with the help of a virus laboratory, but clearly there is the prospect that we will learn to identify clinical signs which are of great diagnostic value through reference to laboratory studies and etiologic confirmation. Much has already been accomplished by this practice, as witnessed by what we have learned of the newer exanthemata, pleurodynia, and pharyngoconjunctival fever.

The book is well written, illustrated, and indexed. GILBERT DALLDORF

NURSING SERVICE AND PATIENT CARE: A STAFFING EXPERIMENT — By Peter Kong-ming New; Gladys Nite; and Josephine M. Callahan. Publication No. 119. Kansas City, Mo.: Community Studies, Inc. (724 Railway Exchange Bldg.), 1959. 124 pp. No price listed.

RESEARCH IN PATIENT CARE — A Report on a Meeting of the Committee on Research of the National Health Council. New York: National Health Council (1790 Broadway), 1960. 36 pp. No price listed.

Both of these reports testify to increasing interest in the study of factors related to patient care and its improvement. The first is a full account of a study conducted in two hospitals in Kansas City, Mo., designed to seek answers to the question, "Is there an optimum nursing hours of care?" The study, experimental in design, involving shifting two variables—hours of care and per cent of graduate nurses on the floor—so as to produce nine situations. Patients and nurses were asked to evaluate each of the situations. The assumption underlying the study was that the manipulation of quantities of nursing service could be related to changes in qualities of patient care. Results of the study were inconclusive and, according to the authors, "need to be further explored and reinterpreted."

"Research in Patient Care" reports a meeting held in January, 1960, of the Committee on Research of the National Health Council. It includes reports on three projects related to the topic—on nursing needs of chronically ill, ambulatory patients, from New York Hospital-Cornell Medical Center; the Public Health Service project on progressive patient care; and a rehabilitation project at Thayer Hospital, Waterville, Maine. EDWARD WELLIN

REHABILITATION OF MENTALLY ILL— Edited by M. Greenblatt and B. Simon. Washington, D. C.: American Association for the Advancement of Science (1515 Massachusetts Ave., NW), 1959. 260 pp. Price, $5.00; $4.50 to AAAS Members.

This collection of papers was presented in December, 1957, as a symposium of the American Psychiatric Association in cosponsorship with the American Association for the Advancement of Science and the American Sociological Society. Though the volume is small in size, it is very wide in scope, covering most of the current medical-social approaches to rehabilitation of the mentally ill and including several new, exciting programs.

The book is organized into four major sections: general problems, hospital aspects, transition from hospital to community, and community aspects. The papers are necessarily brief, a fact

that may disappoint those looking for detailed accounts, but a realistic limitation in presenting such a compilation. What is apt to be frustrating to the reader is the marked paucity of bibliographic references to the stimulating material presented.

Examples of the intriguing concepts and notions discussed are: the provocative assertion that (mental) disability is "an artefact of extrinsic origin"; emphasis of the need to levelop patients' assets and avoid "disuse atrophy"; observation of the power struggle of personnel in hospitals; description of a psychoanalytically determined basis for using occupational therapy; the organization of a "half-way" ward as an alternative to a rehabilitation house; the need for redefinition of agency responsibilities.

The editors have been unsuccessful in avoiding objectionable repetition by the many different authors involved. However, the book will appeal to all professionals interested in a bird's-eye view of the over-all problem involved in the rehabilitation of mental patients.

VICTOR J. FREEMAN

SAFE LIVING—By Harold T. Glenn. Peoria, Ill.: Chas. A. Bennett (237 N. Monroe St.), 1960. 288 pp. Price, $3.60.

"Safe Living" is a book designed as a teaching aid for facilitating the instruction of students in accident prevention by teachers in junior high schools.

One of its most attractive features is a generous use of photographs, humorous cartoons and simple, understandable diagrams.

Throughout the book, commendable emphasis is placed on the important role that human behavior plays in accident causation. The author's familiarity with the sometimes negative adolescent response to appeals for safe living is illustrated by the quote from Chapter 1, "Safety is for HE men."

Each chapter is concluded with Topics for Discussion, Self-Check Tests, and a list of true-false statements. These give the teacher an opportunity to firm up the subject matter at appropriate intervals.

In a sense the book takes on many of the characteristics of a pictorialized encyclopedia covering, with commendable brevity, the more frequent causes of accidents and recommended methods of dealing with them.

The inclusion of a discussion of such currently popular topics as "mouth to mouth" resuscitation, poison control, and seat belts suggests that the author has kept abreast of current developments in accident prevention. He has not merely warmed over yesterday's platitudes.

The "Instructor's Guide" which accompanies the book should prove very useful to the hurried and harried teacher, who is constantly under pressure to include additional subject matter in her courses of instruction.

As a supplemental teaching aid for this age group, "Safe Living" should prove to be very useful.

ALBERT L. CHAPMAN

THE NATION'S CHILDREN: VOLUME 1—THE FAMILY AND SOCIAL CHANGE; VOLUME 2—DEVELOPMENT AND EDUCATION; VOLUME 3—PROBLEMS AND PROSPECTS—Edited by Eli Ginzberg. New York, N. Y.: Columbia University Press (2960 Broadway), 1960. Approx. 250 pp. each. Price, $4.50 each.

The theme of the sixth or Golden Anniversary White House Conference on Children and Youth was "to promote opportunities for children and youth to realize their full potential for a creative life in freedom and dignity." These three volumes present facts on the American scene during the past decade in regard to progress and remaining problems. In presenting this material the authors describe well the known health, educational, sociological,

technological, economic, vocational, and social welfare factors which influence American families and their children. There is such a wealth of material in the articles of these three volumes that it is impossible to do justice in a brief summary to any of them. The common thread running through these books is not just the presentation of the facts, themselves, but rather their impact on family and child life today.

In the chapter on "A Healthier World," the author traces the historical development of health services for mothers and children in the United States. He points out that some of the remaining major problems requiring solution include the reduction of perinatal mortality and morbidity; the acquisition of further knowledge regarding the causes and prevention of congenital malformations; the need for further research in the field of mental health; accident prevention; the need for expansion of various "social services" to families, such as homemaker service; the need to develop more effective school health services; the need for development of methods of prepayment and provision of medical care so that continuity and quality will be maintained; and the need for more knowledge of the effects of radiation on child health. For the public health worker this list properly represents the challenge for the next decade.

It is recommended that all three volumes be on the bookshelf (after reading) of all professional and lay people who are in positions of leadership in any community. To these should be added four other publications emanating from the 1960 White House Conference: Recommendations — composite report of forum findings; Children and Youth in the 1960's—survey papers; Reference Papers on Children and Youth; and Information Sheets on Children and Youth.

HELEN M. WALLACE

MAN'S WAY—By Walter Goldschmidt. Cleveland, Ohio: World Publishing Company (2231 West 110th St.), 1960. 253 pp. Price, $4.00.

The title of this volume has a dual meaning; it refers to the manner in which men live and the route that man has traversed through time. The author, an anthropologist, deals in competent and readable style with both. Particular note should be taken of the excellent chapters on social imperatives, social evolution, and the scientific study of society.

MEDICINE AND THE OTHER DISCIPLINES—Edited by Iago Galdston. New York, N. Y.: International Universities Press (227 West 13th St.), 1960. 192 pp. Price, $3.00.

This volume makes available Lectures to the Laity, 1953-1955, of the New York Academy of Medicine. The "other disciplines" include philosophy, physics, anthropology, law, electrochemistry, and nutrition, and the specialty of psychiatry. Some of the authors are Ernest Nagel, Norbert Wiener, David Peck, Benjamin Paul, D. Ewen Camberon, Charles G. King, and others. The separate contributions are uneven in quality and relevance, but none is dull.

MODERN NUTRITION IN HEALTH AND DISEASE (2nd ed.)—Edited by Michael G. Wohl and Robert S. Goodhart. Philadelphia, Pa.: Lea and Febiger (Washington Square), 1960. 1152 pp. Illustrated. Price, $18.50.

The fact that a second edition of this volume appears within five years of publication of the first is indicative of the rapidity of change in the field of nutrition. Discussions of principles of emergency feeding and of the relationship of nutrition to resistance to infection have been expanded. In addition to other revisions and reorganizations, the editors have added two entirely new sections—one on chemical and other additives to foods, and the other on nutrition in relation to cardiovascular disease and atherosclerosis.

SYMPOSIUM ON BASIC RESEARCH — Edited by Dael Wolfle. Publication No. 56. Washington, D. C.: American Association for the Advancement of Science (1515 Massachusetts Ave., N.W.), 1959. 308 pp. No price listed.

This volume reports a symposium held in May, 1959, under the joint sponsorship of the National Academy of Sciences, the American Association for the Advancement of Science, and the Alfred P. Sloan Foundation. Sixteen papers are presented, including one that provides an excellent summary of the symposium. Among the topics which are ably and provocatively discussed are the place of basic research in educational, governmental, industrial, and other settings; sources of support for basic research; and problems general to all scientific work.

THE SELF-IMAGE OF THE FOSTER CHILD —By Eugene A. Weinstein. New York: Russell Sage Foundation (505 Park Ave.), 1960. 75 pp. Price: $2.00.

This is a study of the social-psychological impact of placement upon children placed in foster homes by the Chicago Child Care Society. The author interviewed 61 such children, of both sexes, about half of whom were ages five through seven, and the remainder ages eight through fourteen. Although insisting that his findings are merely "starting points for more definite research," the author suggests that the child's well-being and development depend on the adequacy of his conception of who he is, where he is, why he is there, and on his grasp of the agency's role.

BOOKS RECEIVED

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.

AUDITORY DISORDERS IN CHILDREN. Helmer R. Myklebust. New York, N. Y.: Grune & Stratton, 1960. 367 pp. Price, $7.75.

CANCER: DISEASE OF CIVILIZATION. Vilhjalmur Stefansson. New York, N. Y.: Hill and Wang, 1960. 180 pp. Price, $3.95.

CARE OF THE WELL BABY. Kenneth S. Shepard. Philadelphia, Pa.: Lippincott, 1960. 224 pp. Price, $3.25.

CHEMOTHERAPY IN EMOTIONAL DISORDERS. F. F. Flach and P. F. Regan. New York, N. Y.: McGraw-Hill, 1960. 314 pp. Price, $10.00.

CHRONIC SCHIZOPHRENIA. EXPLORATION IN THEORY AND TREATMENT. Edited by Lawrence Appleby and Jordan M. Scher. Glencoe, Ill.: Free Press, 1960. 368 pp. Price, $6.00.

DOCTORS OF YALE COLLEGE 1702-1815 AND THE FOUNDING OF THE MEDICAL INSTITUTION. Herbert Thoms. Hamden, Conn.: Shoe String Press, 1960. 199 pp. Price, $6.00.

EARLY IDENTIFICATION OF EMOTIONALLY HANDICAPPED CHILDREN IN SCHOOL. Eli M. Bower. Springfield, Ill.: Charles C Thomas, 1960. 120 pp. Price, $5.50.

EDUCATORS GUIDE TO FREE TAPES, SCRIPTS AND TRANSCRIPTIONS (7th edition, 1961). Walter A. Wittich and Gertie H. Halsted. Randolph, Wis.: Educators Progress Service, 1960. 202 pp. Price, $5.75.

EPIDEMIOLOGIC METHODS. Brian MacMahon; Thomas F. Pugh; and Johannes Ipsen. Boston, Mass.: Little, Brown, Medical Book Department, 1960. 302 pp. Price, $7.50.

HEART DISEASE, BLOOD PRESSURE AND STROKES. C. A. D'Alonzo. Houston, Tex.: Gulf Publishing Co., 1960. 159 pp. Price, $3.50.

HELPING THE ELDERLY TO LIVE AT HOME. Kenneth Hazell. London, England: Central Council for Health Education, 1960. 39 pp. Price, 2/–.

HOST INFLUENCE ON PARASITE PHYSIOLOGY. PROCEEDINGS OF THE ANNUAL CONFERENCE ON PROTEIN METABOLISM. Edited by Leslie A. Stauber. New Brunswick, N. J.: Rutgers University Press, 1960. 96 pp. Price, $2.00.

HELMINTHOLOGIA. ANNUS I-1959. ANNUS II-1960. Bratislava, Klemensova 27, Ceskoslovensko: Ustredna Kniznica Slovenskej Akademie Vied.

HUMAN ECOLOGY AND HEALTH. AN INTRODUCTION FOR ADMINISTRATORS. Edward S. Rogers. New York, N. Y.: Macmillan, 1960. 334 pp. Price, $7.75.

THE INFORMED HEART. AUTONOMY IN A MASS AGE. Bruno Bettelheim. Glencoe, Ill.: Free Press, 1960. 309 pp. Price, $5.00.

INTERACTION. TELEVISION PUBLIC AFFAIRS PROGRAMMING . . . AT THE COMMUNITY LEVEL. New York, N. Y.: Television Information Office, 1960. 287 pp. Price, $3.00.

INTRODUCTION TO HEALTH STATISTICS. Satya Swaroop. Baltimore, Md.: Williams & Wilkins, 1960. 343 pp. Price, $8.50.

METROPOLIS AND REGION. Otis Dudley Duncan, et al. Baltimore, Md.: Johns Hopkins Press, 1960. 587 pp. Price, $8.50.

MINERAL METABOLISM. VOL. I, PART I—PRINCIPLES, PROCESSES, AND SYSTEMS. C. L. Comar and Felix Bronner. New York, N. Y.: Academic Press, 1960. 386 pp. Price, $12.00.

MEMOIRS OF RAY LYMAN WILBUR. Edgar E. Robinson and P. C. Edwards, Editors. Stanford, Conn.: Stanford University Press, 1960. 687 pp. Price, $10.00.

MICROBIOLOGY. HISTORICAL CONTRIBUTIONS FROM 1776 TO 1908 BY SPALLANZANI, SCHWANN, PASTEUR, ETC. Edited by Raymond N. Doetsch. New Brunswick, N. J.: Rutgers University Press, 1960. 233 pp. Price, $5.00.

PRIMER OF SOCIAL CASEWORK. Elizabeth Nicholds. New York, N. Y.: Columbia University Press, 1960. 181 pp. Price, $4.50.

PROTEIN AND AMINO ACID REQUIREMENTS IN EARLY LIFE. L. Emmett Holt, Jr., et al. New York, N. Y.: N. Y. University Press, 1960. 63 pp. Price, $1.00.

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YOU AND YOURS. HOW TO HELP OLDER PEOPLE. Julietta K. Arthur. Philadelphia, Pa.: Lippincott, 1960. 315 pp. Price, $1.95.

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A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

Raymond S. Patterson, Ph.D., F.A.P.H.A.

"Stirring Event"—Humor is a rara avis in public health literature, or in any scientific medium for that matter. So any successful venture into the funny side of life is not to be missed. In a sanitary engineering journal, of all places, are some comments by an anonymous British philosopher about the crowning of "Miss A.W.W.A." on a springboard over a pool filled with drinking water collected from 50 states and four foreign countries. The commentator's musings turn to the possibilities of duplicating such a hazardous effort in staid old England where "there are one or two authorities who will be in a spot of trouble because of water so hard that it won't pour at all."

ANON. Partially Oriented on a Stirring Event. Water and Sew. Works J. 107.10:395 (Oct.), 1960.

Pulling Together for the Alcoholic—The central idea of this excellent summarizing address at the close of a conference on alcoholism is this: "Most alcoholic patients can be cared for by general agencies: mental health clinics, family care agencies, general hospitals, vocational rehabilitation services, and many others." How to induce these community services to take part in the over-all scheme is a matter worth your thought. (A following paper helps to find some answers.)

BRIGHTMAN, I. J. The Future of Alcoholism Programs. Pub. Health Rep. 75.9:775 (Sept.), 1960.

Party Games at Work—In London, a one-evening-a-week "social club" for the rehabilitation of former mental patients is carried on by a psychiatrist, a welfare officer, and a social worker assisted by untrained volunteers. How "members" are recruited, what they like to do, and what benefits the club accomplishes are interestingly set forth.

CAPSTICK, N., and CANDY, P. A Therapeutic Social Club. M. Officer 104.13:189 (Sept. 23), 1960.

Which is Public Health?—Discussed here is the controversial matter of defining the scope and limitations of public health in laboratory diagnostic services and deciding which procedures may be financed out of public funds and which can be charged for.

CLEMMER, J. J. The Approved Public Health Laboratory System in New York State. New York State J. Med. 60.20:3221 (Oct. 15), 1960.

First-Year Illnesses—A British pediatrician kept a record of illnesses during the first year of the 424 babies registered with him. There was no significant sex difference in numbers of illness, but boys had an average of 4.36 visits as compared with only 3.81 for girls. Babies born in spring, summer, autumn, and winter showed very slight differences in illness rates, suggesting nothing from that standpoint to justify family planning for month of birth. Other interesting relationships were looked into.

COOK, N. J. The First Year of Life. M. Officer 104.15:219 (Oct. 7), 1960.

On Writing the Editor—Here is a challenge to you: hunt out the September issue of the (British) Health Educational Journal; then turn to

"Boys Own Paper," an interview with the editor. No matter where your own professional interests may lie, the chances are almost nil that you will put the paper down before you've finished reading it. Indeed the chances are good that you will then read with enjoyment most of the related papers on health information and printed media.

DALZELL-WARD, A. J., and COX, J. Boys Own Paper. Health Ed. J. 18,3:124 (Sept.), 1960.

Safe Water Made Safer—Many more of us than just our sanitary engineering brethren will be interested in the possible revisions to be made in USPHS drinking water standards. The advisory committee appointed to decide these matters will call at least one more meeting before submitting a final report. So those who have firm opinions about water safeguards had better speak now or forever you-know-what.

DERBY, R. L. Water Quality Standards (and four related papers). J. Am. Water Works A. 52,9:1159 (Sept.), 1960.

How Good and How Much?—"Public Health programs . . . are in constant danger of becoming pointless exercises in movement unless there is constantly available some method of accurately expressing the relationship of cost to benefit" wisely say the authors of this study of community chest survey yields (which revealed that less than 10 per cent of all new cases of tuberculosis were found by radiographic screening at a cost of $1,441 per case found).

FLECK, A. C., et al. Evaluation of Tuberculosis Casefinding by Mass Small Film Radiography. Pub. Health Rep. 75,9:805 (Sept.), 1960.

"New Era in Mental Health"—Here is an account of recent developments in British health services, "that have tended to spring up piecemeal in various parts of the country and represent the advanced outposts of what, it is hoped, will become a comprehensive mental health service—one which does not yet exist in (England) or any other country." Psychiatric units in general hospitals, industrial therapeutic schemes, outpatient clinics, day hospitals, community care plans, and social and nursing services are some of the outposts described.

FREEDMAN, H. L., AND FARNDALE, W. A. J. Current Aspects of Psychiatry in Great Britain. Ment. Hyg. 44,4:475 (Oct.), 1960.

Lab Note—A technic for estimating poliovirus antibody levels using only drops of blood is proposed. The drops are absorbed directly on filter paper. The technic was developed largely to avoid collecting, preserving, and handling large blood specimens which are difficult and costly in mass surveys. Field trials have demonstrated that the new method detects satisfactorily rises in antibody following injection.

GREEN, R. H., and OPTON, E. M. A Micro-Method for Determination of Poliovirus Antibody Suitable for Mass Surveys. Am. J. Hyg. 72,2:195 (Sept.), 1960.

Some Unsaturated Enthusiasts May Be Distressed—Trappist monks living on a low calorie and moderate fat diet—the fat from milk and unsaturated oils—and who carry on a heavy, three-hour activity load daily, were found to have lower than average blood cholesterol levels. However, these lower levels appeared not to spare these men from arteriosclerosis or arterial hypertension, which in fact were more frequently found among them than among similarly aged men generally.

MCCULLAGH, E. P., and LEWIS, L. A. A Study of Diet, Blood Lipids and Vascular Disease in Trappist Monks. New England J. Med. 263,12:569 (Sept. 22), 1960.

Prophet in Wilderness—At the Atlantic City meeting came this call from the American School Health Association: all physicians and medical

societies should take a firm public stand on the important question of persuading young nonsmokers of the potentially harmful effects of cigarette smoking. The facts on which this call to arms is based are known to us all as are the counter arguments of the manufacturers' mouthpieces.

MITCHELL, R. S. Cigarette Smoking, Cigarette Advertising and Health. J. School Health 30,7:251 (Sept.), 1960.

Help Compounded—Two groups of children living in a community with a fluoridated water supply were given topical applications—one with stannous fluoride, the control with distilled water. There was a significant reduction in caries reported in the treated children as compared with the controls.

MUHLER, J. C. The Anticariogenic Effectiveness of a Single Application of Stannous Fluoride in Children Residing in an Optimal Community Fluoride Area. J. Am. Dent. A. 61,4:431 (Oct.), 1960.

Jumpy People—Compared here are normotensive and hypertensive groups of persons whose blood pressure readings showed marked variations. The subjects, in both groups, whose pressure readings varied the most exhibited behavior signs characterized as hysterical, hypochondriacal, and anxious during their visits with the examining physician. This report serves to introduce three epidemiologic studies of atherosclerotic and hypertensive conditions, all of which will be of interest to the epidemiologists among us, whether full-time or dilettante.

OSTFELD, A. M., and LEBOVITS, B. Z. Blood Pressure Lability: A Correlative Study. J. Chronic Dis. 12,4:428 (Oct.), 1960.

Christmas Cheer—Epidemiologic investigation of institutional outbreaks of Salmonellosis indicated unpasteurized eggnog to be the offending vehicle. Eggs from the supplying hennery were found to be infected but the point is made that only a very few of the many eggs used probably caused the damage. Commercial Christmas eggnog, in the state concerned, was said to be pasteurized: It is to be hoped that it is everywhere. Is it?

PHILBROOK, F. R., et al. Salmonellosis Spread by a Dietary Supplement of Avian Source. New England J. Med. 263,13:713 (Oct. 13), 1960.

For the Buttonholed—A good deal of newspaper and news magazine publicity was given the report that Tolbutamide (administered to an MS patient for another condition) had resulted in the almost complete remission of the multiple sclerotic symptoms. You may want to fortify yourself against insistent appeals for comment on this news by worried acquaintances. The entire story of the work done, and under way, subsequent to the initial observation should be looked up.

SAWYER, G. T. Treatment of Multiple Sclerosis with Tolbutamide, J.A.M.A. 174, 5:470 (Oct. 1), 1960.

No Place Like Home—Bristol (England), with annual deaths of over 5,000, has about the same number of chronic sick and aged persons who are under the watchful and domiciliary management of its four full-time health visitors (with the supplementary help of district nurses). Quantitative measures of the nature and amount of these nursing and social services are offered for comparative purposes to other (British) cities that may have services or should.

SHEEN, E. M., and DUNCAN, E. H. L. A Survey of Health Visitors' Work Among Chronic Sick and Aged in Bristol. M. Officer 104,12:175 (Sept. 16), 1960.

City Hall Health—"There are three separate, though related, aspects regarding the health of the staff of a local authority (all city employees, to you) that should be the concern of

the Medical Officer of Health." So begins this (British) discussion of (1) preemployment examinations, (2) occupational causes of sickness, and (3) illness absences. Is there an American example of a city health department's responsibility for similar services throughout all city departments? "Many people think that the only hazard to local government employees is sitting on a drawing board pin" says the author wryly.

WARREN, M. D. Staff Fitness and Staff Morbidity. M. Officer 104,14:205 (Sept. 30), 1960.

Carrier's Hands—An ingenious research was set up originally to determine whether hospital nursery staph infections are spread directly from infant to infant or on droplet nuclei or dust. Later the study was extended to include personnel-to-infant spread. The results indicate that personnel-to-infant spread plays the major role and infection moves predominantly from the hands of the carrier to the infant.

WOLINSKY, E., et al. Acquisition of Staphylococcus by Newborns: Direct Versus Indirect Transmission. Lancet 7151:620 (Sept. 17), 1960.

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NEWS FROM THE FIELD

WHO News

WHO Regional Committees Meet

The annual meetings of the six WHO regional committees were held in August to measure health progress and assess needs. Findings at the meetings included the following:

Western Pacific—Regional director I. C. Fang, M.D., reported that the countries of the region attribute a number of economic improvements to recent public health measures. For example, the production of rice was sufficient for all the needs of the Philippines for the first time in its history. According to Dr. Fang the area of land available there for its culture has been augmented by 20 per cent, "thanks to the anti-malaria campaign." He noted that between 1955 and 1960, after a similar campaign in Cambodia, the population in the under-populated province of Cham had doubled, mostly through immigration. Land value, on the other hand, is now 50 times greater in the province than in 1955. Also reported: the governments of the region have favorably welcomed WHO's proposal for a large-scale public water supply program.

Europe—According to director P. J. J. van de Calseyde, M.D., housing, air pollution, standards of drinking water, dental services for children, protection from atomic radiation, improved vaccines, and better and cleaner milk are some of the matters that governments have asked the European office to work on. Studies on cancer and cardiovascular diseases have been started. His report also states that there is good evidence that chronic bronchitis and cancer of the lung are connected with air pollution, their incidence increasing rapidly in cities which are highly polluted.

Southeast Asia—Regional director Chandra Mani, M.D., reported that "The most distressing public health problem of the Southeast Asia region . . . is nutrition." He blamed "poverty's twins, malnutrition and insanitation," for what he termed the deplorable state of public health. Although governments of the region are making strong efforts to reduce poverty, through various degrees of industrialization, the "sinister role" of these twins is still not properly appreciated, he said. The loss of working time is "really staggering." Unless government planning bodies give top priority to the improvement of these two vital conditions, the drain on national economies will grow steadily. Dr. Mani also declared that there is need for more dynamic national food production policies to increase the total output of food grains such as rice and wheat and to make nutrients such as milk, eggs, fish, and vegetables available to all.

WHO assisted governments in the Southeast Asia region with 129 projects employing 238 WHO field workers during the past year. The budget is approximately nine million dollars, including funds provided by UNICEF for supplies and equipment.

The Americas—The regional committee for the Americas, which is also the executive committee of the Pan American Health Organization, met in Havana this year. Regional director Abraham Horwitz, M.D., reported that 505 persons received specialized training through fellowships from WHO during the year, and 667 auxiliaries received training in the integrated programs to help staff 229 WHO and other health projects.

The year brought forth new hazards to the air, food, water, and general en-

vironment in which the people of the region work and live, the report said. These include increasing amounts of river and beach pollution by sewage and industrial wastes; air pollution problems in large cities; and problems of exposure to vapors, dust, liquids, ionizing radiations, and other hazards that accompany the increase of industry and the application of new developments. As to nutrition, the diet in most countries lacks sufficient animal proteins. Extensive trials were made in Guatemala in 1959, with Incaparina, a mixture of vegetable proteins possessing a nutritive value similar to milk. The Institute of Nutrition of Central America and Panama (INCAP) developed this preparation, and governments are showing great interest in it. Dr. Horwitz reported.

Africa—The new African governments require help to consolidate their public health services and train staff in medical and allied fields, F. T. C. Cambournac, M.D., said in his annual report. With the additional $160,000 added to the 1961 budget to help African members, WHO will be able to help meet some of the more pressing needs. This committee met in Ghana, with 48 representatives of 30 countries, most of them newly independent or emerging states.

Also reported: optimum conditions for many infectious diseases still exist in Africa. Malaria affects the whole region with the exception of Basutoland. Nevertheless, transmission has been completely interrupted in some places, particularly in the forest areas of Cameroun and Liberia. "Remarkable progress" has been recorded in Zanzibar, Pemba, and Mauritius.

Eastern Mediterranean—Reporting to subcommittee "A", A. H. Taba, M.D., regional director, stated that a record number of WHO projects, 185, had been reached in the region.

Malaria eradication is already in progress or at the planning stage in 14 countries and territories of the region, he said. Also, smallpox eradication, a high-priority program, is now easier because of the use of thermostable dry vaccine which resists tropical temperatures. A quarter of the regional budget was devoted to the training of medical and allied personnel.

Subcommittee "B" of this region endorsed the regional office's efforts in educating professional personnel, in improving the fellowship program, and in promoting environmental sanitation, mental health, and nutrition programs. The subcommittee recognized that malaria in countries not yet engaged in eradication programs is a threat to neighboring countries where such projects are advancing, and urged all member states to give high priority to eradication activities.

WHO Fellowships for Americans

United States citizens wishing to avail themselves of short-term fellowships made possible by WHO should note that the 1961 deadline date for applications is February 1, 1961. Applicants must be engaged in full-time public health or educational work (see this column, A.J.P.H. 30:119, Jan., 1960, for general information). Further information from Howard M. Kline, Ph.D., Secretary, WHO Fellowship Selection Committee, Public Health Service, Washington 25, D. C.

A Doctor of Nursing Program

What is reported to be the country's first program leading to a doctor of nursing science degree has been established at the Boston University School of Nursing.

The first offering of the program is to be in psychiatric nursing. The objective will be to develop the nurse's role further to include well-defined psychotherapeutic responsibilities, which

she undertakes in collaboration with the psychiatrist. Offerings in other clinical areas are expected to be introduced later.

Approximately half of the 60 semester hours required will be in nursing and biological science courses given in the nursing school. Correlative courses, with particular emphasis on the behavioral sciences, research skills, and the humanities, will be offered through other graduate faculties of the university.

Nutrition Board to Examine

The American Board of Nutrition will hold the next examinations for certification as specialist in human nutrition on Monday, April 10, 1961, in Atlantic City. Applications must reach the secretary not later than March 1, 1961; forms from the secretary, Robert E. Shank, M.D., Department of Preventive Medicine, Washington University School of Medicine, Euclid and Kingshighway, St. Louis, Mo.

New England Health Institute: 26th

Vermont State Health Department was the 1960 host to NEHI, which met in Manchester July 11-13. Registrants were invited to "Look Ahead in Public Health" and, on the inside cover of the printed program, were told something of the "background thinking which eventually influenced our decision to develop this type of program." In this somewhat unusual approach institute planners point out that the issue they chose to face was "whether to develop a technical, subject-matter centered program for ourselves as nurses, sanitarians, laboratory technicians, health officers or educators, or whether to develop (one) for ourselves as public health professionals working in a health-agency setting facing common problems." Their choice was the latter. Among their reasons: "We wanted some help from the students of human behavior. . . . This is an exploratory meeting. We can go back to the more traditional type of program next year if we wish."

At session one, on "Present and Future Community Health Needs", Herman Hilleboe, M.D., M.P.H., New York State's health commissioner led off, stating that chronic diseases are destined to take "a huge portion of our time, creative energy, and resources." We must devise ways of screening masses of people, he said, and must conduct good epidemiological studies. Programs will require the help of behavioral scientists in getting people to change their living habits so as to forestall chronic affliction. "Perhaps it needs reminding," he said, "that a certain Galilean put his knowledge of human behavior to work most incisively in his efforts to get his message across." Speaking of long range planning: "When we hear the thunder of new developments, the lightning has already struck some where." Preventive medicine henceforth will be concerned with the "visions of the future. It will anticipate scenery shifts early and meet them before jumbled chaos results."

Edward M. Cohart, M.D., M.P.H., then acting chairman, Department of Public Health, Yale School of Medicine, spoke of the need to measure the effect of programs. Do we, for example, put too much effort into case finding in school health and too little into taking action about the cases we find? If we are to undertake new and needed programs we must continually determine priorities, he said.

Berwyn F. Mattison, M.D., M.P.H., executive director of APHA, dealt with the need for gaining acceptance for health programs. He pointed out that new and strange programs are not looked upon kindly and that public health progress may suffer more from

the "status quo seekers than the status seekers." However, workers who are doing their best must also learn to be patient "and hope that perhaps 20 years from now people will look back and say, 'Why of course they did that; what else?'" Dr. Mattison also spoke of the power of people's emotional experiences to determine public attitudes on programs. He questioned whether the elimination of so many acute childhood diseases had not perhaps contributed to juvenile delinquency. "Nothing will cement a family more solidly than tragedy. The old families of six or eight children almost inevitably lost one or two as they were growing up." Did this not provide a "cementing" influence which has been absent for the past generation, he asked.

At the banquet, Bradley Buell, executive director of Community Research Associates, Inc., New York City, declared that "only when one grasps the nettle of reality and faces up to the community-wide problems that must be resolved does planning become focused and dynamic." He spoke of the need to reshape concepts and methods of epidemiology in order to improve community planning and administration of the chronic disease program. He noted, too, that there is now no pivotal agency which by law or by common consent would plan and administer the total range of such a program. "Leadership is where you find it. It consistently follows neither logic nor structure."

The morning of the second day was given over to five panelists and a reactor panel for "Reviewing Inter-Agency Relationships" in the region. According to one of the principal speakers, Horace Brown, executive director of the Connecticut Heart Association, a considered effort to establish better working relationships at local levels would probably uncover latent possibilities for cooperative action which hitherto have gone unrecognized. Another panelist, J. K. Shafer, M.D., chief of the Division of General Health Services, PHS, stated that coordination is an essential element of a complex society and an index of maturity. Coordination also requires the specialist to surrender some determination of where, when and how much his skill will be applied.

Registrants gathered into informal discussion groups in the afternoon to discuss problems related to the topics of the three preceding sessions. In the evening, Harold S. Barrett, M.D., M.P.H., Connecticut's deputy health commissioner, moderated a "Discussion of the Future of NEHI" and of the questions: Should we continue sponsoring NEHI? If so, what do we want to get out of future meetings? After what was reported to be a "lively and at times heated" discussion, it was agreed that there was need for NEHI and for greater emphases on NEHI's continuity and coordination.

The final session on the following morning was devoted to a "Summary and a Look Ahead: Public Health and Human Behavior, Problems and Prospects." Walter Wardwell, Ph.D., associate professor of sociology at the University of Connecticut, said the Institute had provided delegates with a chance to see individual problems as part of a larger picture and to share their doubts, frustrations and satisfactions with others. In a profile of the health officer, Edward Wellin, Ph.D., field director of APHA's Study of Behavioral Sciences in Public Health, spoke of the four hats health officers wear: the physician's, the public official's, the administrator's and the community coordinator's. Their multipronged responsibilities call for astuteness in the art of communication, he said. William Weidman, M.D., director of the Division of Sanatoria and Tuberculosis, Massachusetts Department of Public Health, acknowledged the value

of the social scientist and his tools in the public health program but said he should fit into it, not dominate it.

Nathan Lefkowitz, director of the Office of Public Health Education, Vermont State Department of Health, was chairman of the executive committee of the 26th meeting of NEHI. Maine will be host to the 27th, on as yet undetermined dates.

The Model of a Modern Engineer

In August the National Council of State Boards of Engineering Examiners (NCSBEE) adopted "A Model Law: A Guide for the Preparation of Uniform Laws for the Examination of Engineers and Land Surveyors."

Wyoming was the first state in the Union to adopt an engineering registration law. This was in 1907. By 1953, all states had enacted such laws. During the interim, however, several professional engineering societies had seen the need for greater uniformity in the registration laws of the separate states. By 1932 they had banded together and issued a model law. This was revised in 1937, 1943, and 1946. In 1958, NCSBEE undertook a further revision, submitting preliminary drafts to interested groups and holding regional hearings to facilitate comment; the 1960 model is the result.

Copies are 10 cents, obtainable from James H. Sams, Executive Secretary, NCSBEE, P. O. Drawer 752, Clemson, S. C.

Future of the Nation's Watercourses

(Editor's Note: In view of the close working relationship between the APHA and the Water Pollution Control Federation and because of the widespread professional interest of public health workers in water conservation and pollution control, the following statement is reproduced in full.)

STATEMENT ON WATER POLLUTION CONTROL

Adopted by the Board of Control of the Water Pollution Control Federation

October 6, 1960

Pollution of the Nation's watercourses, ground waters and coastal waters is a continuing hazard to health, comfort, safety and economic welfare. While considerable progress has been made in pollution control by many municipalities and industries, many water resources areas are being degraded, impaired and damaged by such discharges, and they will be further adversely affected by the amount and pattern of population growth, industrial expansion and technological advancements.

To assure the conservation and protection of the Nation's water resources, the Water Pollution Control Federation believes:

1. That the discharge of pollutional wastes into the waterways of the Nation should be controlled.
2. That the type and extent of treatment and control for any specific situation must be determined after consideration of the technical factors involved.
3. That the responsibilities for the adequate treatment and control of wastes to overcome pollution must be shared individually and jointly by industry and local, state and federal governments.
4. That basic and applied research by competent personnel must be encouraged by broad mutual effort to develop new knowledge that will solve water pollution problems.
5. That the administration of pollution control must be firm, effective and equitable.
6. That the administration of state and interstate pollution control programs should remain in the hands of state and interstate water pollution control agencies, which must be supported by increased budgets and adequately staffed by well trained and compensated engineers, scientists and other personnel.
7. That the primary objective of pollution control is the protection of the public health, with other objectives adding im-

pelling reasons for water resources protection.

8. That federal activity in water pollution control should be administered by the Public Health Service, which is best fitted to perform these functions by virtue of its long experience and close cooperation with state health departments and state and interstate water pollution control agencies.
9. That the public must be made fully aware of the hazards of pollution and of the workable means for control, so that it will sponsor and support construction and proper operation of all necessary facilities.
10. That mandatory certification or licensing of better trained and compensated operating personnel is the best ultimate means for assuring the most effective operation and maintenance of pollution control facilities.
11. That standards for radiation hazards in water pollution control should be primarily in the interest of the protection of the public health.
12. That the control of toxic and exotic chemicals should be exercised, to the maximum extent practicable, at the source in order to prevent problems in water pollution control.
13. That federal, state and local fiscal laws and practices should be devised and modified to assure the most economical and effective means for financing the construction, operation and upgrading of wastewater treatment works.

Two New Homes

The Colorado State Department of Health held dedication ceremonies for its recently built new headquarters in September. The address is 4210 E. 11th St., Denver 20. The department was formerly housed in the State Office Building. The new construction is on land belonging to the University of Colorado Medical Center which was leased by the Regents of the University of Colorado to the Department of Public Health for 50 years for one dollar. The location of the site puts the new offices in an environment of governmental and private medical care facilities.

"Biological Abstracts" is now being published in a new home of its own at 3815 Walnut St., Philadelphia 4, Pa. The move was made in October. A symposium on problems and trends in scientific communications marked the dedication of the building. Biological Abstracts is a nonprofit organization founded in 1926 to provide a comprehensive abstraction of the world's research literature in all the fields of biology. Today it reviews more than 4,900 journals and in 1960 expects to publish more than 72,000 abstracts. G. Miles Conrad is director of the service.

American Hospital Association

At the annual meeting of the American Hospital Association (Aug. 29-Sept. 1), Frank S. Groner, administrator of Baptist Memorial Hospital, Memphis, Tenn., succeeded Russell A. Nelson, M.D., director of Johns Hopkins Hospital, Baltimore, as president. Jack Masur, M.D., director of the Clinical Center, National Institutes of Health, was named president-elect. John H. Hatfield, director of Passavant Hospital, Chicago, was reelected treasurer.

Other news: At AHA headquarters, Maurice J. Norby, deputy director of the Association, is now also director of the new Department of Hospital Financing and Community Planning. He was also appointed secretary of the newly created Council on Blue Cross, Financing and Prepayment, which succeeds the Council on Planning, Financing and Prepayment. Two divisions have been formed in the new department: (1) The Division of Blue Cross Relations, headed by Richard M. Jones, director of the former Blue Cross Commission (as of September 30, the Blue Cross Association; no change of address); and (2) the Division of Hospital Relations, to be directed by Hiram Sibley, who was secretary of the Council on Planning, Fi-

nancing and Prepayment. Both men have also been named associate secretaries of the new Council.

Training Opportunities

The National Institute of Mental Health and the Russell Sage Foundation are now financing several traineeships for advanced study in the doctoral program in social work and social science at the University of Michigan. Stipends range from $750 to $4,350.

The interdepartmental program offers degrees combining social work with sociology, social psychology, psychology, or economics, and prepares students for careers in research, teaching, and policy development. Students with bachelor's degrees only, as well as students with a master's degree in social work or a social science discipline, may apply. Deadline for filing applications for Fellowship is February 1, 1961. Detailed information from Dr. Henry Meyer, School of Social Work, The University of Michigan, Ann Arbor.

The Communicable Disease Center in Atlanta will offer a three-week course in Epidemiology for Nurses from March 13 to 31. This is to be a refresher, designed to increase the technical knowledge and skills of nurses in the prevention and control of communicable diseases, with emphasis on epidemiologic and statistical principles and technics. Current major communicable diseases, including the insect- and animal-borne diseases transmissible to man, are to be considered, along with the principles on which nursing care in these diseases is based.

Communicable disease nursing consultants, public health nursing supervisors, educational directors, qualified public health staff nurses, industrial nurses, and instructors in schools of nursing are among those eligible for admission. Further information from chief, Specialized Training Unit, Nursing Section, Epidemiology Branch, Communicable Disease Center, 1600 Clifton Road, NE, Atlanta 22, Ga., or from the director of public health nursing, state health department of each state. The number of admissions is restricted; applications should reach CDC by February 15, 1961.

APHA Supplement Available from American Heart Association

The October, 1960, supplement of the A.J.P.H. is available from either APHA or American Heart Association, 44 East 23 St., N. Y. 10. Price: $1 per copy.

PERSONALS

W. W. Armisted, D.V.M., dean, College of Veterinary Medicine, Michigan State University, East Lansing, has been appointed national consultant in veterinary medicine, Office of the Surgeon General, USAF, Washington, D. C.

Leona Baumgartner, M.D.,* health commissioner, New York City Department of Health, has received the Diamond Jubilee Award of the New York City Branch of the American Association of University Women, for outstanding leadership in health education.

Charles E. Berry, director, Department of Hospital Administration, Catholic Hospital Association of the United States and Canada, St. Louis, Mo., and associate director, Department of Hospital Administration, St. Louis University, is now also assistant to the executive director of the association.

Charles M. Carpenter, M.D.,* professor of infectious diseases, University of California School of Medicine, Los Angeles, has been on a two months' leave of absence, during which he addressed the International Union Against Cancer in Tokyo, lectured at universities in Japan, Korea, and Spain, and surveyed a medical school in Indonesia.

William J. Cassel, Jr., M.D., M.P.H.,† formerly director, Bureau of Maternal and Child Health, Missouri State Division of Health, is now health officer, Jackson County (Illinois Department of Public Health) with headquarters in Murphysboro.

* Fellow.
† Member.

JAMES PATRICK COONEY, M.D. (Major General MC, USA ret.), formerly Chief Surgeon of the Army in Europe, is now vice-president for medical affairs, American Cancer Society, New York City.

HALBERT L. DUNN, M.D., Ph.D.,* formerly chief, National Office of Vital Statistics, Public Health Service, Washington, D. C., is now special assistant in aging, Division of General Health Services, PHS, Washington, D. C.

CUTTING B. FAVOUR, formerly director, Department of Immunology, Palo Alto (Calif.) Medical Research Foundation, is now professor and chairman, Department of Preventive Medicine, Georgetown University, Washington, D. C.

REINALDO A. FERRER, M.D.,* is now research associate in administrative medicine, School of Public Health and Administrative Medicine, Columbia University, New York City, on leave of absence from his position as regional coordinator and director of research, Puerto Rico Department of Health.

JANE FLEMING, M.D., a physician in the Maternal and Child Health Division, Allegheny County Health Department, Pittsburgh, Pa., is now health officer in the department's Northwest District.

SARAH E. GILL, R.N.,* formerly resident lecturer, is now assistant professor of public health nursing, School of Public Health, University of Michigan, devoting full time to the program of instruction in mental health.

ROSCOE H. GOEKE,† sanitary engineer director, PHS, formerly assigned to the New Jersey State Department of Health as acting chief, Radiological Health Program, is now chief, Data Analysis Unit, Division of Radiological Health, Bureau of State Services, PHS, Washington, D. C. He will be editor of Radiological Health Data, a monthly report.

RALPH C. GRABER,* formerly assistant chief, is now chief, Air Pollution Engineering Program, Bureau of State Services, PHS, succeeding FRANK TETZLAFF* on loan to the International Cooperation Administration as sanitary engineering advisor to the Ministry of Health, Lima, Peru.

DUDLEY W. HARGRAVE, M.D., M.P.H.,† formerly commissioner of health, Ulster County, N. Y., is now associate public health physician (medical rehabilitation), New York State Health Department.

OMAR C. HOPKINS,† formerly assistant chief, Division of Engineering Services, is now deputy chief, Division of Water Supply and Pollution Control, Bureau of State Services, PHS, succeeding ARVE H. DAHL,* now on a year's tour of duty at the Industrial College of the Armed Forces in Washington.

COLONEL ROBERT L. HUMMER, VC, USAF,* formerly veterinarian, Air Force European Exchange, Wiesbaden, Germany, is now assistant chief of veterinary services, School of Aviation Medicine, Brooks Air Force Base, Tex.

SAMUEL C. KAIM, M.D., formerly chief of inpatient psychiatry and neurology, VA hospital, Coral Gables, Fla., is now chief of psychiatric research, Veterans Administration, Washington, D. C.

CHARLES V. KIDD, Ph.D.,† formerly director, Research Planning Branch, is now associate director for institutional relations (new position) NIH, Bethesda, Md. JOSEPH S. MURTAUGH succeeds him in his former position.

GEORGE E. LEONE, M.D., M.P.H., former U. S. Army surgeon, is now district health officer, Jamestown (N. Y.) District Health Department.

LOWELL S. LEVIN, Ed.D., M.P.H.,† formerly assistant professor of health education, College of Medicine, University of Vermont, Burlington, is now associate study director, Study of Manpower Needs in the Basic Health Sciences, University of Pittsburgh (Pa.), Schools of the Health Professions. The Federation of American Societies for Experimental Biology is study sponsor.

CAROL L. LOOMIS, M.P.H.,† formerly administrative dietician, Rhode Island Hospital, Providence, is now apprentice nutritionist, Bureau of Nutrition, New York State Department of Health.

ROBERT I. MCCLAUGHRY, M.D., formerly director of a National Academy of Sciences-National Research Council project reviewing the medical research program of the Veterans Administration, is now director of medical education service for the Veterans Administration.

RICHARD D. MUDD, M.D.,* medical director, Chevrolet-Grey Iron Foundry, Saginaw, Mich., has been appointed national consultant in occupational medicine to the Surgeon General of the U. S. Air Force.

C. H. MUNGER, M.D.,† Lyon County health officer, Emporia, Kansas, has retired.

JAMES B. RAMSEY, formerly chief engineer and superintendent, Water Department of Kansas City, Mo., is now assistant secretary, American Water Works Association, New York City.

HUGH B. ROBINS, M.D.,* formerly professor of public health practice, University of Michigan School of Public Health, Ann

* Fellow.
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Arbor, is now deputy commissioner, Allegheny County Health Department, Pittsburgh, Pa.

MARY S. RUMRILL, R.N.,† formerly assistant chief, Nursing Section, North Carolina State Board of Health, is now director, Division of Public Health Nursing, New Mexico Department of Public Health, Santa Fe.

HOWARD A. RUSK, M.D.,† has received the Distinguished Service Award and Medal of the National Society for Crippled Children and Adults.

LEO SHATIN, Ph.D.,† formerly associate professor of psychology, Albany Medical College, and chief clinical psychologist, Veterans Hospital, Albany, N. Y., is now professor of clinical psychology and chief, Division of Behavioral Sciences, Department of Psychiatry, Seton Hall College of Medicine and Dentistry, Jersey City, N. J.

MAJOR ROBERT W. SHERWOOD, MC, USA,† formerly chief of the Health Center, Ft. Dix, N. J., is now chief, Communicable Disease Branch, Preventive Medicine Division, Army Surgeon General's Office, Washington, D. C.

EDWARD L. STOCKTON,* formerly sanitation chief, Kent County (Mich.) Health Department, is now director of sanitation activities, Central District, Allegheny County Health Department, Pittsburgh, Pa.

DOROTHY E. SWINBURNE, formerly assistant project coordinator, Referral Unit Project, New York City Youth Board, is now consultant on health and welfare services, Association of The Junior Leagues of America, Inc., New York City.

MEREDITH H. THOMPSON, Dr.Eng.,* formerly director, Bureau of Environmental Sanitation, is now assistant commissioner of the recently established Division of Environmental Health Services, New York State Department of Health, Albany.

COLONEL O. ELLIOTT URSIN, MC, USA,† formerly surgeon, Seine Area Command, and commanding officer, U. S. Army Hospital, Paris, is now deputy commander and chief of professional education, Fitzsimmons General Hospital, Denver, Colo.

DEATHS

ANDREW F. ALLEN, M.P.H.* who was chief, Resort Section, New York State Department of Health, Albany, retired in 1956 (Engineering and Sanitation Section).

ERNEST D. EASTON,† executive secretary, emeritus, New Jersey Tuberculosis League, retired (Unaffiliated).

ROLLIN W. HOYT,† president, International Equipment Company, Boston, Mass. (Laboratory Section).

S. STEWART MURRAY, M.D., D.P.H.,† senior medical health officer for the Metropolitan Health Committee, Greater Vancouver, Canada, and vice-president of Western Branch, APHA, for the year 1957, on September 23 (Health Officers Section).

ERNEST W. PROTHRO, M.D.,† of Detroit, Mich., on August 4, 1960 (Unaffiliated).

BURTON L. ROCKWELL, M.D.† of Oriskany Falls, N. Y. (Health Officers Section).

CONFERENCES AND DATES

American Public Health Association, Eighty-Ninth Annual Meeting, Detroit, Mich. November 13-17, 1961.

State and Regional Public Health Meetings—December, 1959, and January, February, 1961:

California, Southern, Public Health Association. Miramar Hotel, Santa Monica. December 2.

Mississippi Public Health Association. Robert E. Lee Hotel, Jackson. December 7-9.

Tennessee Public Health Association. Hermitage Hotel, December 7-9.

Meetings of Other Organizations:

American Association of School Administrators. San Francisco, Calif. January 25-28, 1961.

Council on Social Work Education. Montreal, Canada. February 1-4, 1961.

International Conference of Social Work, 10th. Rome, Italy. January 8-14, 1961.

National Dairy Council. Louisville, Ky. February 7-9, 1961.

National Conference on Water Pollution. Washington, D. C. December 12-14.

National Swimming Pool Institute. Adolphus and Baker Hotels. Dallas, Tex. January 7-10, 1961.

United Community Funds and Councils of America, Conference of Community Welfare Council Leaders. Biennial. Pittsburgh, Pa. January 12-13, 1961.

White House Conference on Aging. Washington, D. C. January 9-13, 1961.

University of Oslo International Summer School offers second time: MEDICAL CARE AND PUBLIC HEALTH SERVICES IN NORWAY. (Registration limited) July 1-28, 1961 in Oslo, Norway. Two weeks of lectures and local visits in Norway; 14-day field trip. Write: Oslo International Summer School, Northfield, Minnesota.

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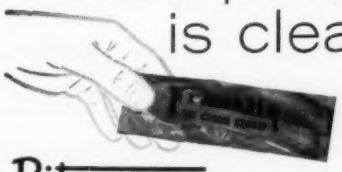

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